Cardiff®
Air Conditioning

Mini Chiller Service Manual

（T1/R22/50Hz）

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PRODUCT INTRODUCTION

1 MODELS LIST

1.1 Split Type

Model		Nominal Capacity	Power Supply	Appearance	
Refrigerant	Model Name	kW	(V,Ph,Hz)	Outdoor Unit	indoor Unit
R22	CHLR8WZ-K	8.0	220～240 1Ph 50Hz		
	CHLR10WSZ-K	10.0			
	CHLR12.5WSZ-K	12.5			
	CHLR15WSZ-K	15.0			

Note:1Ton =12000Btu/h = 3.517kW

1.2 Integral Type

Model		Nominal Capacity	Power Supply	Appearance
Refrigerant	Model Name	kW	(V,Ph,Hz)	
R22	HLR19S/A-M	19	380~415V 3Ph 50Hz	
	HLR25S/A-M	25		
	HLR32S/A-M	32		
	HLR35S/A-M	35		
	HLR45S/A-M	45		

Note:1Ton =12000Btu/h = 3.517kW

2 NOMENCLATURE

1.1 Split Type

HL R 15 W S Z - K (O)
1 2 3 4 5 6 7 8

NO.	Description	Options
1	Mini chiller	-
2	Product type	Default=Cooling only R=Heat pump
3	Nominal Cooling Capacity	8=8kW 10= kW 12.5= kW 15= kW
4	Structure type	Default=Vertical type W=Horizontal type
5	Refrigeration Circuits	Default=One circuit S=Twin circuit
6	Product configuration	Z=Combination
7	Voltage	K=220~240V,1Ph,50Hz
8	Indoor and outdoor unit code	I=Indoor unit O=Outdoor unit

1.2 Integral Type

HL R 35 S A - M
1 2 3 4 5 6

NO.	Description	Options
1	Mini chiller	-
2	Product type	Default=Cooling only R=Heat pump
3	Nominal Cooling Capacity	19=19kW 25=25kW 35=35kW 45=45kW
4	Refrigeration Circuits	Default=One circuit S=Twin circuit
5	Design number description	A
6	Voltage	K=220~240V,1Ph,50Hz

3FUNCTION

Indoor Unit Type	Function	Description
Split Type	Cooling and heating	Interface kit for up to 16 indoor units Memory restart Two circuits optimized design Low noise design Safety and reliability thanks to advance compressor balance control
Integral Type		

4 PRODUCT DATA

4.1 Product Data at Rated Condition

4.1.1 Split Type

Models				HLR_WSZ-K			
				8	10	12.5	15
Nominal Capacity	Cooling		kW	8	10	12.5	15
			Btu/h	27300	34120	42650	51180
			RT	2.3	2.9	3.6	4.3
	Heating		kW	9	11	13	16
			Btu/h	307000	37550	44356	54600
			RT	2.6	3.1	3.7	4.6
Power Consumption	Cooling		kW	3.0	3.6	4.5	5.0
	Heating		kW	2.95	3.6	4.4	4.9
Power Supply				220~240V,1Ph,50Hz			
Safeties				High/Low pressure switch, compressor thermal protection, over current protection, lose of phase/anti-phase protection, antifreezing protection, water flow switch			
Refrigerant	Type			R22			
	Charge		kg	3	1.8X2	2.2X2	2.35X2
Compressor	Type			scroll			
	NO.			1	2	2	2
Evaporator	Heat Exchanger			Tube-in-Tube			
	Water In/Out Pipe Diameter		Inch	1’	1’	1’	1’
Condenser	Heat Exchanger			Aluminum fin-copper tube			
	Fan Motor Power Input		kW	0.1	0.14	0.14	0.2
Pump	Water Flow		L/s	0.4	0.5	0.6	0.7
			GPM	1.76	2.2	2.64	3.1
	Delivery Lift		m	20	20	20	18
	Power Input		kW	0.55	0.55	0.55	0.55
Expansion Vessel Volume			L	5	5	5	5
Indoor Unit	Unit / Packing Dimension	Height	mm	288/385	288/385	288/385	288/385
		Width	mm	1100/1285	1100/1285	1100/1285	1100/1285
		Depth	mm	450/682	450/682	450/682	450/682
	Net/Gross Weights			84/96	84/96	84/96	84/96
Outdoor Unit	Unit / Packing Dimension	Height	mm	840/850	840/1280	1250/1280	1250/1280
		Width	mm	1018/1100	1018/1100	1032/1110	1032/1110
		Depth	mm	412/450	412/450	412/450	412/450
	Net / Gross Weights			90/100	120/131	120/131	140/151

4.1.2 Integral Type

Models			HLR__S/A-M				
			19	25	32	35	45
Nominal Capacity	Cooling	kW	19	25	32	35	45
		Btu/h	64828	85300	109184	119420	153540
		RT	5.4	7.1	9.1	10	13
	Heating	kW	21	27	34	38	54
		Btu/h	71650	92124	109276	129656	184248
		RT	6	7.7	9.7	10.8	15.4
Power Consumption	Cooling	kW	6.8	9.0	11	13	16.3
	Heating	kW	6.56	8.85	10.8	14	17.5
Power Supply			380~415V 3Ph 50Hz				
Safeties			High/Low pressure switch, compressor thermal protection, over current protection, lose of phase/anti-phase protection, antifreeze protection, water flow switch				
Refrigerant	Type		R22				
	Charge	kg	2.9X2	3.9X2	5.9X2	6.5X2	8.5X2
Compressor	Type		scroll				
	NO.		2	2	2	2	2
Evaporator	Heat Exchanger		Tube-in-Tube		Shell and tube		
	Water In/Out Pipe Diameter	Inch	1’	1’	1-1/2’	1-1/2’	1-1/2’
Condenser	Heat Exchanger		Aluminum fin-copper tube				
	Fan Motor Power Input	kW	0.4	0.4	0.6	0.6	0.6
Pump	Water Flow	L/s	0.9	1.2	1.7	1.7	2.2
		GPM	14.5	18.9	22.9	22.9	35.2
	Delivery Lift	m	22	24	25	25	27
	Power Input	kW	1.0	1.0	1.9	1.9	1.9
Expansion Vessel Volume		L	8	8	8	8	8
Unit / Packing Dimension	Height	mm	1850/1960	1850/1960	1850/1960	1760/1870	1761/1870
	Width	mm	1460/1540	1460/1540	1640/1540	1750/1830	1750/1830
	Depth	mm	530/610	530/610	530/610	800/880	800/880
Net/Gross Weights		kg	370/375	380/385	455/470	580/600	670/690

NOTE：

1.Cooling capacity is based on the following conditions：leaving chilled water temp.7℃,outdoor air temp.35℃

2.Heating capacity is based on the following conditions：leaving warmed water temp.45℃, outdoor air temp.7℃

3.Water flow range for operation must be from 70% to 120% of the rated water flow。

4. The maximum allowable pressure for water pipe is 0.9MPa

4.2 Operation Range

Mode	Range of Outdoor Temperature℃ (℉)
Cooling	16~48
Heating	-15~28

4.3 Pressure-loss Conversion Chart

Water Flow （m3/h）	1.2	1.4	1.7	1.9	2.0
The percentage （%）	70	80	100	110	120
Loss of Pressure (kPa)	200	100	0	100	200

NOTE:
The percentage is contrasted to nominal water flow.

4.4 Electrical Data

4.4.1 Split Type

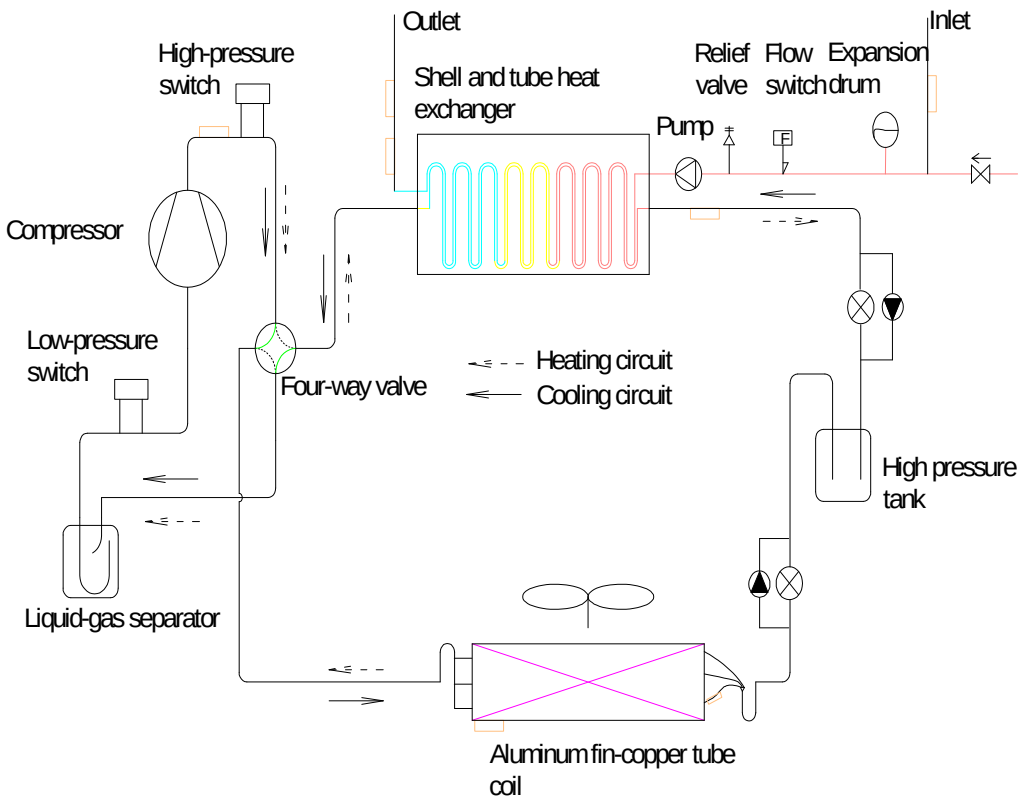
Model	Rated Power Supply	Compressor			Fan Motor Outdoor		Pump	Total	
		NO.	LRA each (A)	MRC each (A)	NO.	MRC (A)	MRC (A)	MRC (A)	NRC (A)
HLR8WSZ-K	220~240V 1Ph 50Hz	1	97	21.2	1	1.5	0.7	23.4	17
HLR10WSZ-K		2	49	13.2	2	2	0.7	31	22
HLR12.5WSZ-K		2	52	16.1	2	3	0.7	39	28
HLR15WSZ-K		2	69	17	2	3	0.7	47	33.5

4.4.2 Integral Type

Model	Rated Power Supply	Compressor			Fan Motor		Pump	Total	
		NO.	LRA each (A)	MRC each (A)	NO.	MRC (A)	MRC (A)	MRC (A)	NRC (A)
HLR19S/A-M	380~415V 3Ph 50Hz	2	42	9.5	2	5	1.5	19.5	14
HLR25S/A-M		2	56	11.2	2	5	1.5	23.5	16.8
HLR32S/A-M		2	69	13.4	2	7.5	3	39	28
HLR35S/A-M		2	101	15.3	2	7.5	3	42	30
HLR45S/A-M		2	110	21.4	2	7.5	3	54	38.5

Notes:
LRA: Locked rotor amps (A)
MRC: Maximum running current (A)
NRC: Nominal running current (A)

5 PIPING DIAGRAM

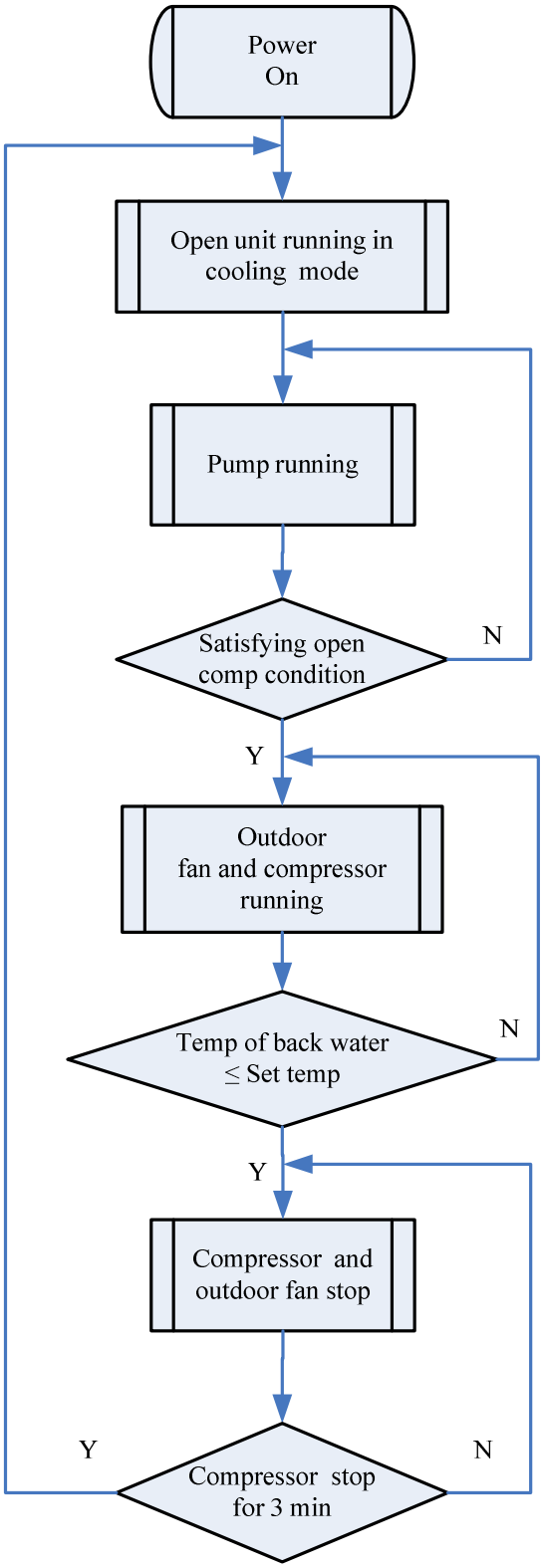


CONTROL

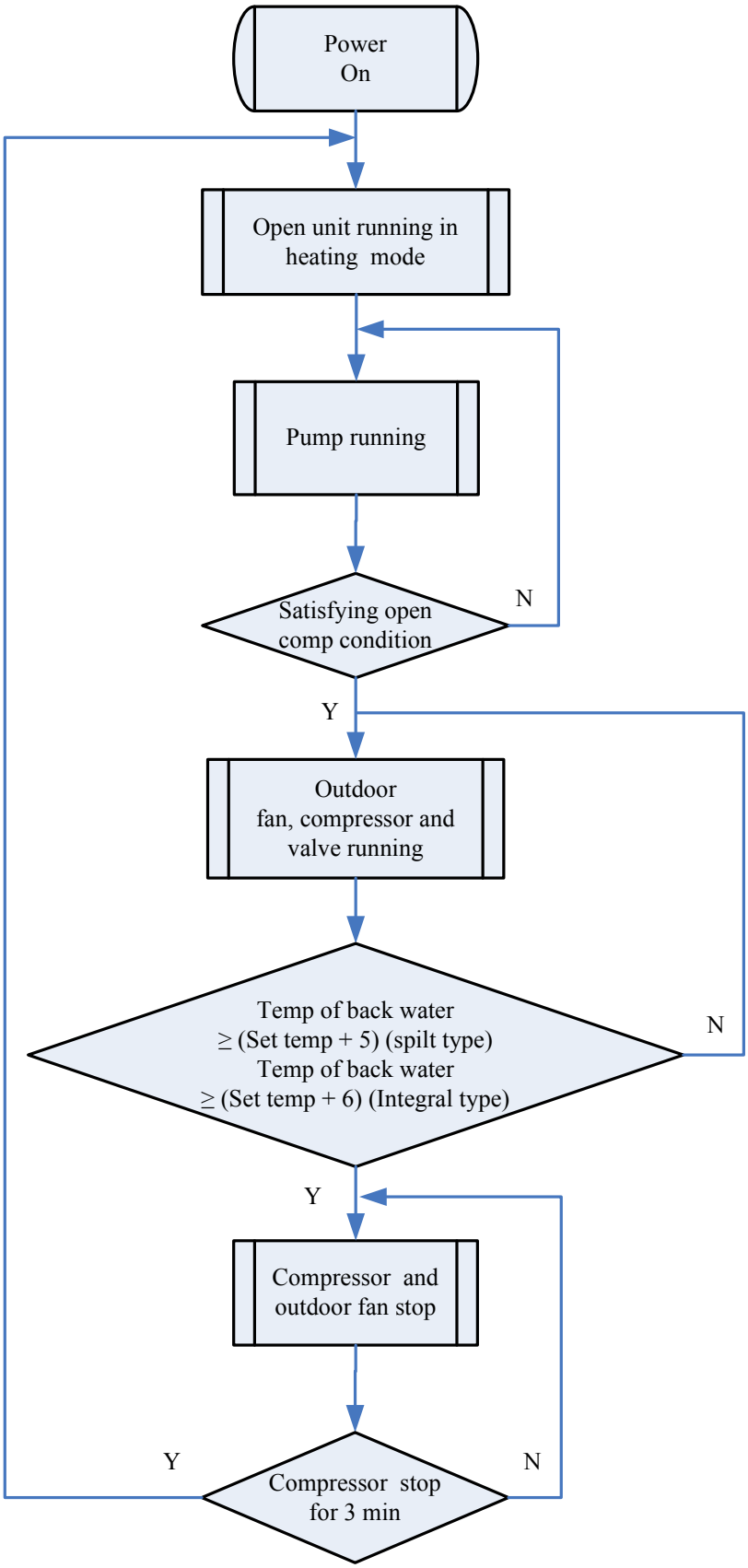
UNITS CONTROL

1 OPERATION FLOWCHART

1.1 Cooling Operation



1.2 Heating Operation

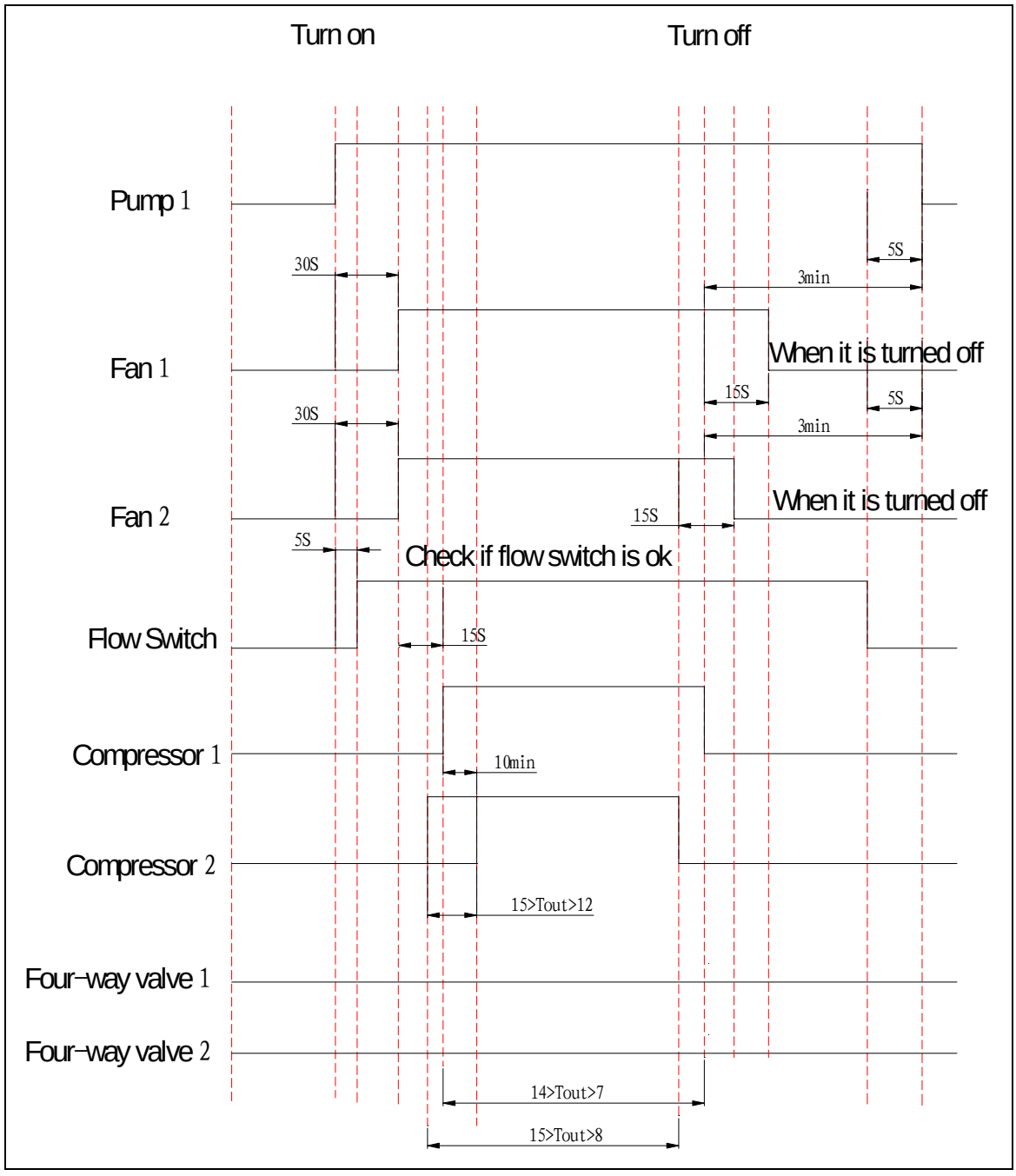


2 MAIN LOGIC

2.1 Cooling Mode

When press ON button, if the outdoor temperature is over 16℃， it starts the water pump first after 30s.If the outlet water temperature meets the cooling running requirements, it starts the fans of outdoor unit. Then the compressor will run after 15s. During the period of cooling, the unit will stop if the outlet water temperature meets the stopping requirements and the running time of compressor is over the shortest running time required. The fans of outdoor unit will stop after 15s.

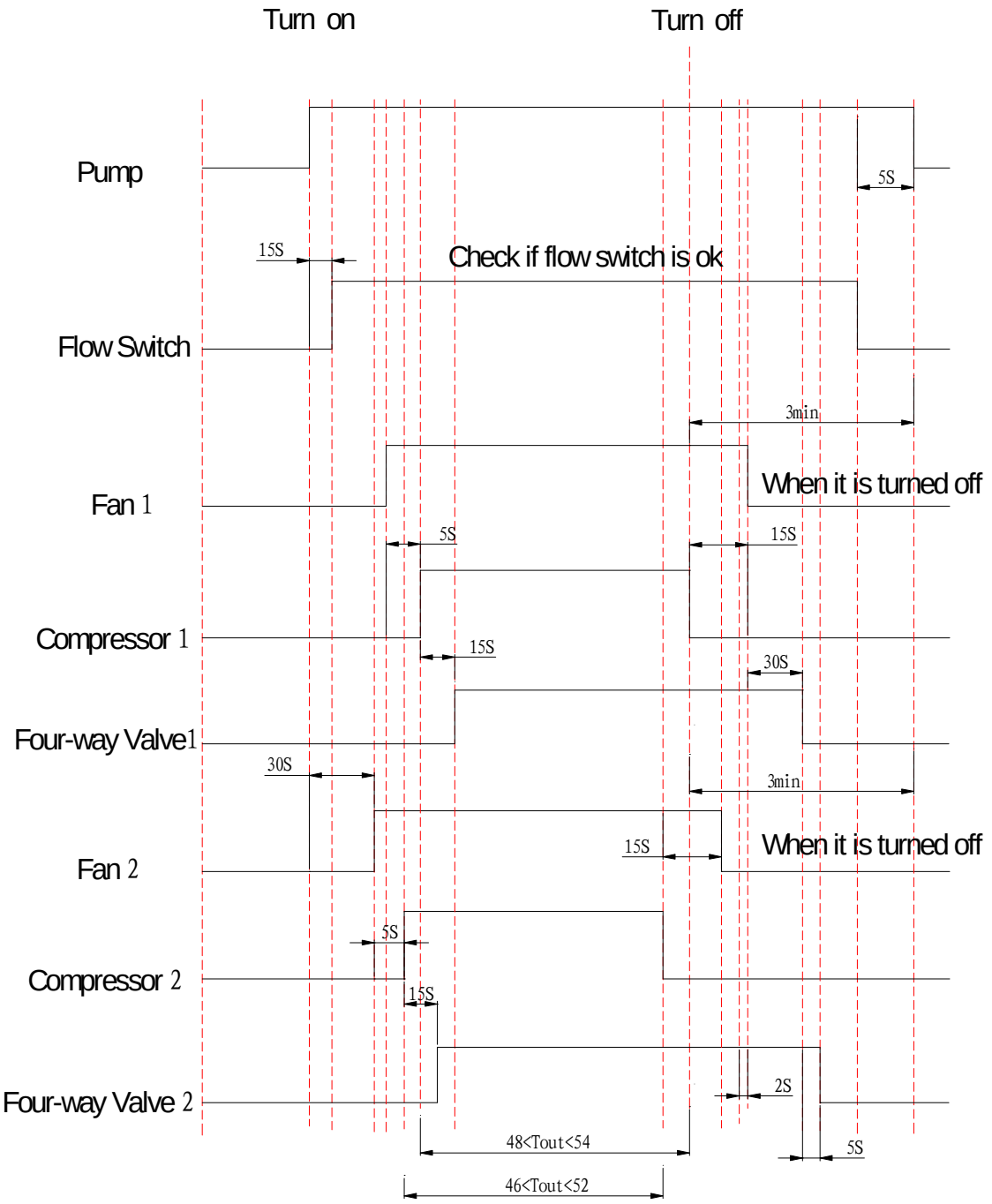
If the outdoor temperature is below 16℃, the unit will stop, and turn off all loads except the water pump.



2.2 Heating Mode

When press ON button, if the outdoor temperature is below 28℃, it starts the water pump first after 30.If the outlet water temperature meets the heating running requirements, it starts the fans of outdoor unit. Then the compressor will run after 15s. During the period of heating, the unit will stop if the outlet water temperature meets the stopping requirements and the running time of compressor is over the shortest running time required. The fans of outdoor unit will stop after 15s.

If the outdoor temperature is over 28℃, the unit will stop, and turn off all loads except the water pump.



2.3 Defrosting Mode

The condition of start defrosting mode:

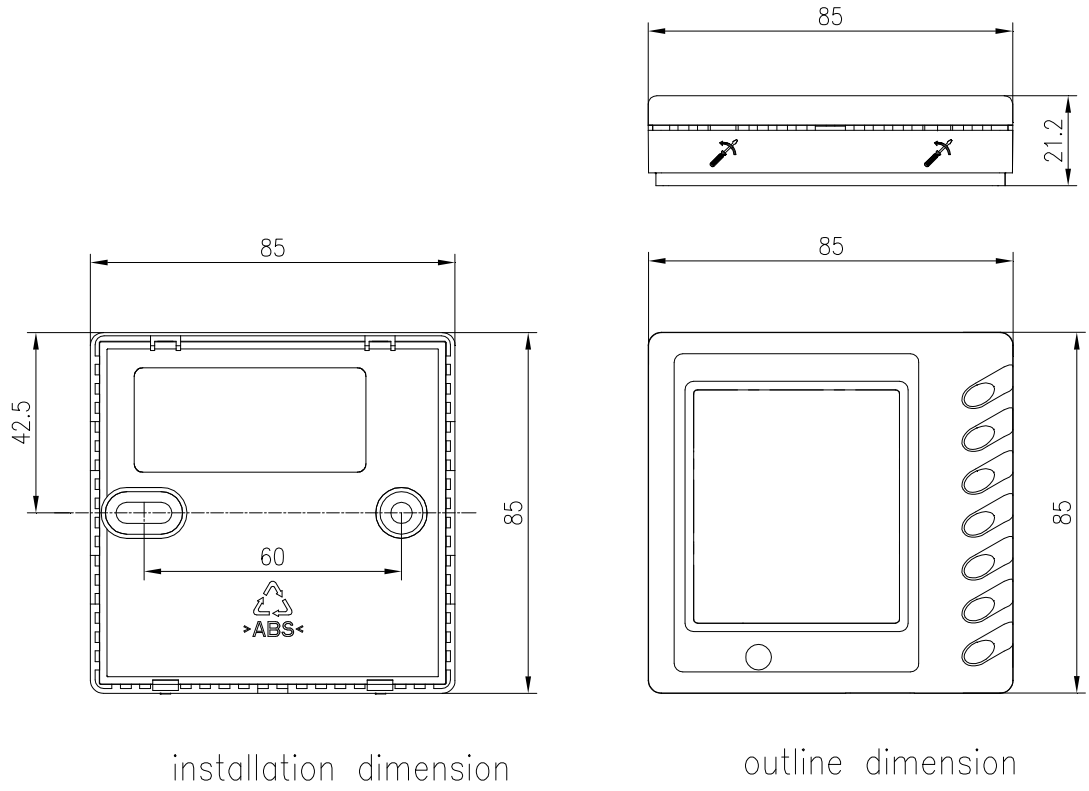
Under heating mode, if the accumulative running time of compressor is over the set interval time of defrosting（default 45min）, and the defrosting temperature is lower than the set starting temperature(default -4℃) ,the unit will start running defrosting mode, and the 4-way valve will shut off and the outdoor fan will stop after 2s.

The condition of quit defrosting mode:

Under defrosting mode, if the continual defrosting time is over the set continual time of defrosting（default 8min）, and the defrosting temperature is over the set stopping temperature(default 20℃) ,the unit will restart running heating mode, and the 4-way valve will start and the outdoor fan will run.

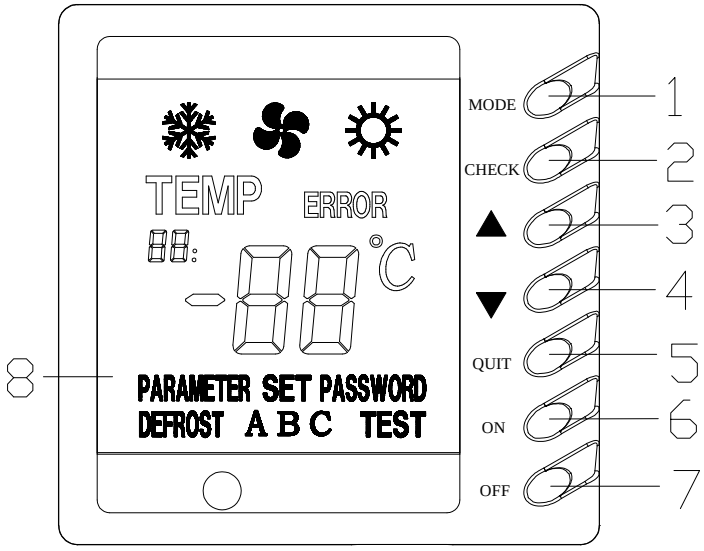
3 WIRED CONTROLLER

3.1 Dimension



3.2 Function

3.2.1 Operation View



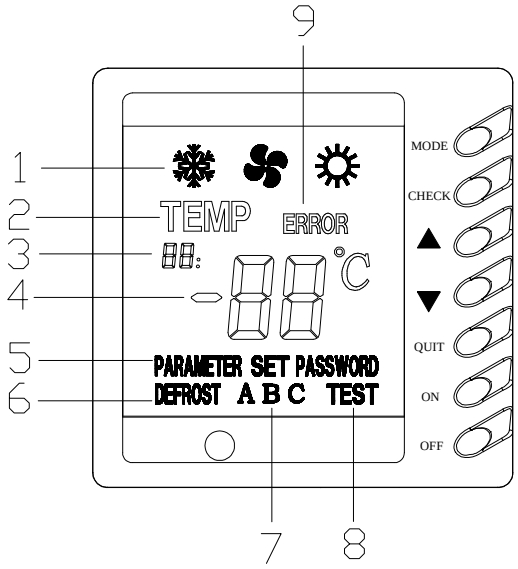
NO.	Name	Function description
1	MODE button	It can switch between cooling and heating, and this button is available only in cooling and heating mode.
2	CHECK button	Press it once under normal state to enter check mode. Under Check mode, pressing this button when “17” is displayed can change the value of “17”. Under Parameter Set mode, pressing it once can switch the adjusting objection between parameter and value. Press this button for about 5s to save and quit this parameter setting.
3	Increasing button	To increase present set value or change set/check object.
4	Decreasing button	To decrease present set value or change set/check object.
5	QUIT button	Under Set and Check mode, press it once to quit this mode. Under Parameter Set mode, this set value would not be saved. Press this button for about 5s to set sound, and make sound switch between always on and always off.
6	ON button	To turn on the unit; when under compel operation, press it once to quit compel operation.
7	OFF button	To turn off the unit; press it once to quit compel operation when the unit is under compel operation.
8	LCD display	Display information of the unit.

Note：

(1) Turn On, Off Auxiliary Heater: It is only available for heat pump unit. Press **CHECK** once to enter Check mode. Press ▲ and ▼ to change check object, press **CHECK** again till the present check object becomes "17", value "17" switches between 01/03 (auxiliary heater on) and 00/02 (auxiliary heater off). That is 00 Off —>01 On —>00 Off, or 02 Off —>03 On —>02 Off.

(2) Check Parameter: After electrifying for 20s, press **QUIT** then ▲ to enter parameter checking mode. Under this mode, **Auxiliary display area** shows the checking object, **Main display area** displays the value for the checking object. Press ▲ and ▼ to change the checking object. Press **QUIT** to quit from the check mode.

3.2.2 Display View



NO.	Name	Function description
1	Running mode display	: cooling mode, : heating mode, : reserved
2	Temp display	It shows temperature value displayed at main display area.
3	Auxiliary display area	It contains 2 numbers and a comma, for showing temperature and number of parameter at main display area. It only displays when under Check mode and Parameter checking mode.
4	Main display area	It contains a minus, 2 numbers and 1 temperature unit, for displaying value of temperature and parameter (temperature or time value) and error code. When temperature value is displayed, it shows value in algorism and temperature unit; when time is displayed, it shows algorism value but no temperature unit (default unit is min); when it is code, it displays specific error (refer to Malfunction Error List) but no temperature unit. Individual temperature or parameter may exceed 99, then adopt AX for 100～109, bX for 110～119, CX for 120～129, dX for 130～139, EX for

		140～149, FX for 150～159, and X stands for a number between 0～9. Under normal state, it shows temperature for back water.
5	Parameter display	It means the value shown at present main display area is parameter. It shows only under Parameter Check mode.
6	Defrost display	It displays when defrosting, otherwise it doesn't displays.
7	System ID	It displays when system or compressor orders, for showing which system is defrosting.
8	Testing display	For testing, it displays under compel operation.
9	Error code display	It shows the error code displayed on Main Display Area. It displays when there is error at system or communication.

Caution:

(1) When unit is off, it displays only temperature of back water. When unit is on, under normal state, if there is no error, it displays temperature of back water, if there is error, it displays error code; when there is no operation after 60s of pressing the button, it quit back to normal state display automatically.

(2) Auto antifreeze operation display (only for heat pump unit)

When auto antifreeze function is started and relevant conditions are satisfied, unit begins auto antifreeze operation. At this time, LCD main display area displays code d2 (if there is error it displays error code).

3.3 Installation

1. First select an installation position. According to the size of the communication line of the wire controller, leave a recess or a embedded wire hole to bury the communication line.
2. If the communication line between the wire controller (85×85×20) and the indoor unit is surface-mounted, use 1# PVC pipe and make matching recess in the wall (refer to Figure 6); If concealed installation is adopted, 1# PVC pipe can be used (Refer to Figure 7).
3. No matter if surface mounting or concealed mounting is selected, it is required to drill 2 holes (in the same level) which distance shall be the same as the distance (60mm) of installation holes in the bottom plate of the wire controller. Then insert a wood plug into each hole. Fix the bottom plate of the wire controller to the wall by using the two holes. Plug the communication line onto the control panel. Lastly install the panel of the wire controller.

Caution:

During the installation of the bottom plate of the wire controller, pay attention to the direction of the bottom plate. The plate's side with two notches must be at the lower position, and otherwise the panel of the wire controller cannot be correctly installed.

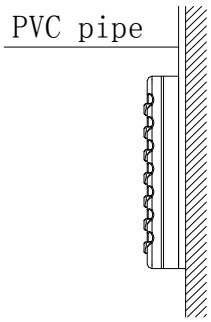


Fig6：Surface Mounting of Cable

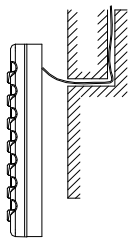


Fig7：Concealed mounting of Cable

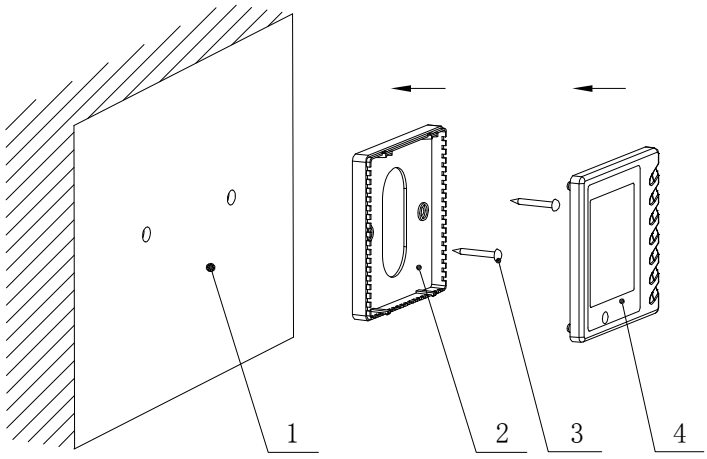


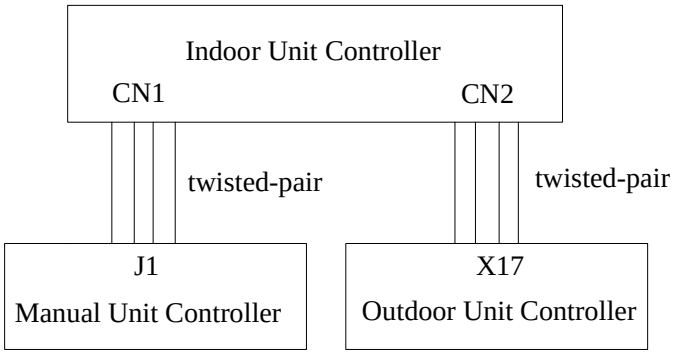
Fig 8 Schematic Diagram of Installation

No.	Name
1	Wall Surface
2	Bottom Plate of Wire Controller
3	Screw M4X10
4	Panel of Wire Controller

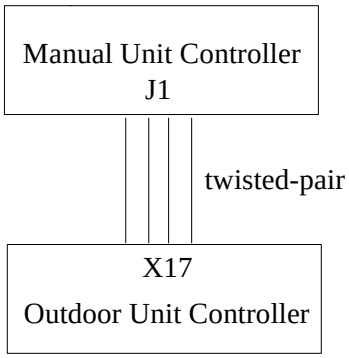
⚠ Caution:

1. The communication distance between the main board and the wire controller can be as far as 20m (The standard distance is 8m).
2. The wire controller shall not be installed in a place where there is water drop or large amount of water vapor.

4 CONTROL WIRING DESIGN



The controllers of the split type unit include manual controller, indoor unit controller and outdoor unit controller. The indoor unit controller communications with manual controller and outdoor unit controller in RS485. The indoor unit controller connects manual controller with 4-line twisted-pair. Similarly, the indoor unit controller connects outdoor unit controller with 4-line twisted-pair.
Indoor Unit Controller



The controllers of the Integral type unit include manual controller and outdoor unit controller. The manual controller communications with outdoor unit controller in RS485. The manual controller connects outdoor unit controller with 4-line twisted-pair.

INSTALLATION

UNITS INSTALLATION

1 UNITS INSTALLING

1.1 Installation Positions

For indoor unit:

- Fix the indoor unit bracket to the wall using appropriate plugs and screws.
- Hang the indoor unit on the top wall mounting bracket.
- Fix the indoor unit at the bottom side using appropriate plugs and screws.

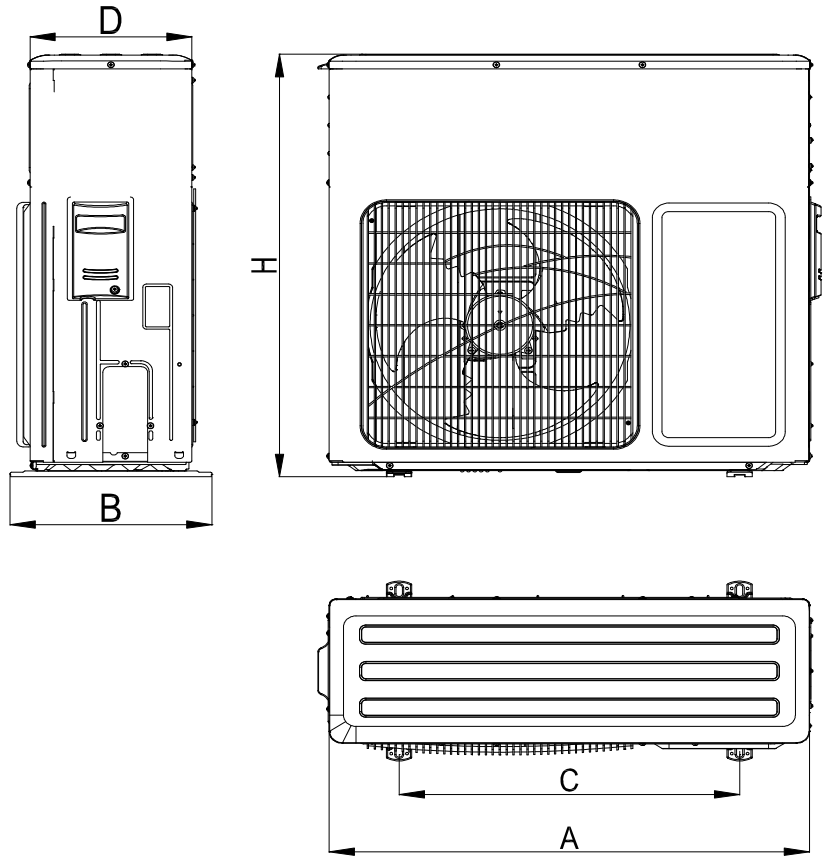
For outdoor unit:

- The installation is frost-free.
- The space around the unit is adequate for servicing.
- The space around the unit allows for sufficient air circulation.
- There is no danger of fire due to leakage of flammable gas.
- All piping lengths and distances have been taken into consideration.

1.2 Matters need Attention

- The indoor unit is packed in a cardboard box and fixed by straps.
- At delivery, the unit should be checked and any demage should be reported immediately to the carrier claims agent.
- Check if all indoor unit accessories are enclosed.
- The indoor unit is heavy and should be lifted by two persons.

1.3 DIMENSION DATA

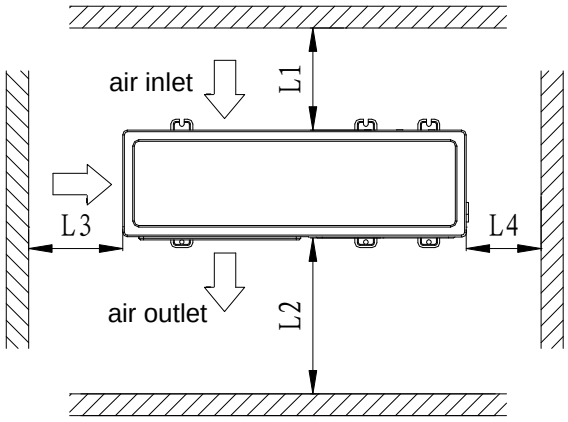


Model	H	A	B	C	D

HLR8WZ-K	840	950	412	572	378
HLR10WSZ-K	1250	950	370	572	340
HLR12.5WSZ-K	1250	950	370	572	340
HLR15WSZ-K	1250	1100	370	590	340

1.2 INSTALLATION CLEARANCE DATA

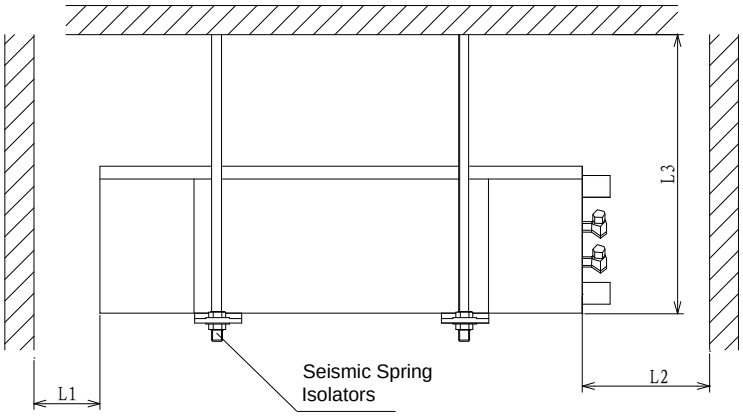
- Split type（Outdoor unit）



unit：mm

demonstration	L1	L2	L3	L4
distance	>500	>1000	>500	>500

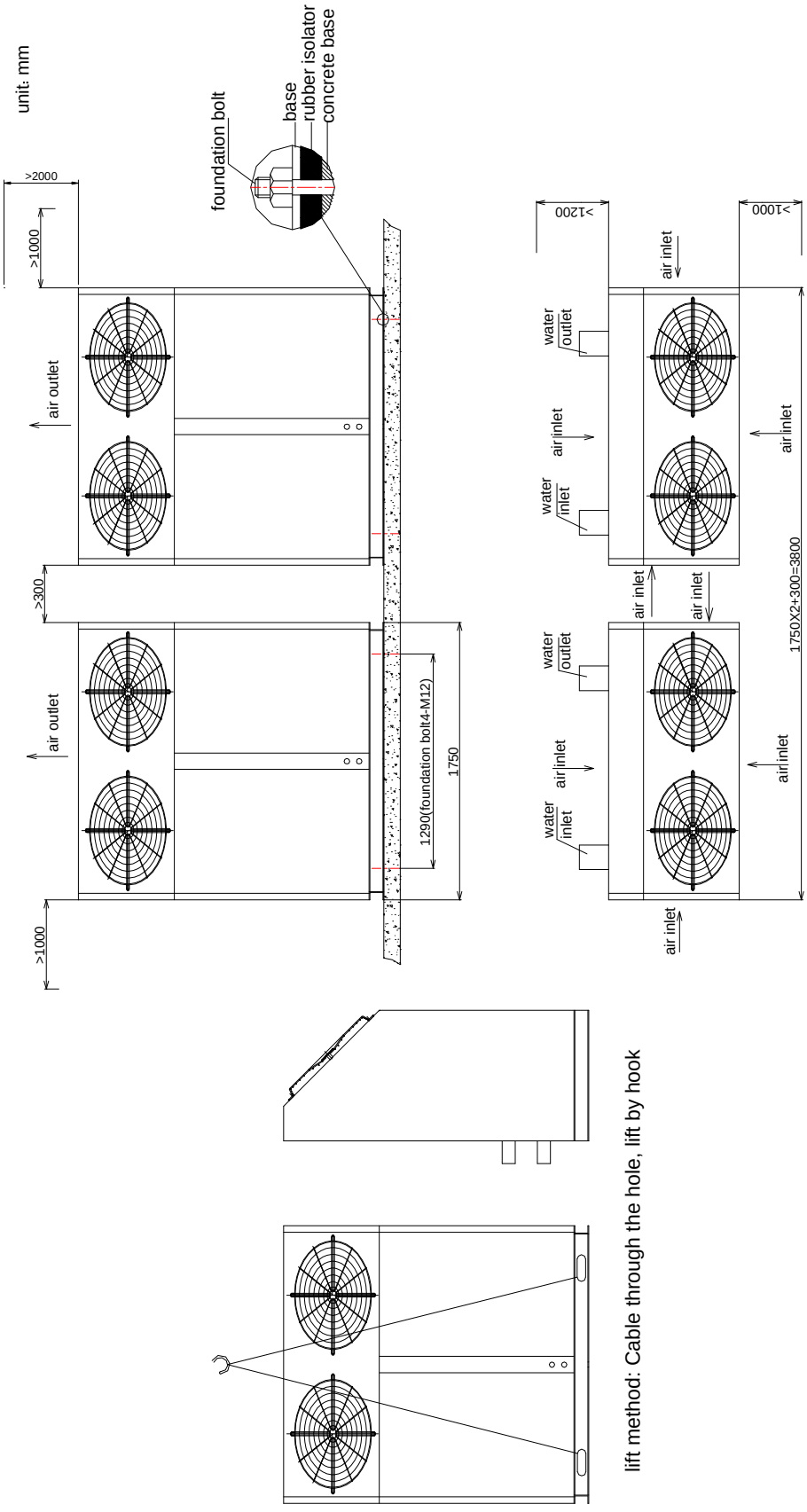
- Split type（Indoor unit）



unit：mm

demonstration	L1	L2	L3
distance	>250	>800	>1200

Integral Type



2 WATER PIPING WORK

2.1 Installation Procedure

For all guidelines, instructions and specifications regarding refrigerant pipework between the indoor unit and the outdoor unit. Please refer to the outdoor unit installation manual.

The units are equipped with a water inlet and water outlet for connection to a water circuit must be provided by a licensed technician and must comply with all relevant national regulations.

2.2 Matters Need Attention

Air vents must be provided at all high points of the system. The vents should be located at points which are easily accessible for servicing. An automatic air purge should be used. Check the valve is not tightened too much so that automatic release of air in the water circuit remains possible.

2.3 Antifreeze

% by Weight	0	12	22	30	36	41
Freezing Point℃ (℉)	0(32)	-5(23)	-10(14)	-15(5)	-20(-4)	-30(-22)
Ambient Temperature ℃ (℉)	8.3(47)	3.3(38)	-1.7(29)	-6.7(20)	-11.7(11)	-16.7(2)
Cooling Capacity Correction Factor	1.0	0.985	0.980	0.974	0.970	0.965
Water Flow Correction Factor	1.0	1.02	1.04	1.075	1.11	1.14
Pressure Drop Correction Factor	1.0	1.07	1.11	1.18	1.22	1.24

3 ELECTRIC WIRING WORK

3.1 Wiring Principle

POWER SUPPLY — The electrical characteristics of the available power supply must agree with the unit nameplate rating. Supply voltage must be within the limits shown. See 3.3 for electrical and configuration data. FIELD POWER CONNECTIONS — All power wiring must comply with applicable local and national codes. Install field-supplied, branch circuit fused disconnect(s) of a type that can be locked off or open. Disconnect(s) must be located within sight and readily accessible.

3.2 Electric Wiring Design

3.2.1 Electric Wiring Design- Split Type

3.2.2 Electric Wiring Design- Integral Type

3.3 SPECIFICATION OF POWER CORD & AIR SWITCH

Model	Power Supply	Capability of Air Switch(A)	Minimum Sectional Area of Earth Wire(mm^2)	Minimum Sectional Area of Power Cord(mm^2)
HLR8WZ-K	220～240V, 1, 50	10	2.5	2.5
HLR10WSZ-K	220～240V, 1, 50	13	2.5	2.5

HLR12.5WSZ-K	220～240V, 1, 50	16	2. 5	2. 5
HLR15WSZ-K	220～240V, 1, 50	16	2. 5	2. 5
HLR19S/A-M	380～415V, 3, 50	25	4	4
HLR25S/A-M	380～415V, 3, 50	32	6	6
HLR32S/A-M	380～415V, 3, 50	50	6	6
HLR35S/A-M	380～415V, 3, 50	63	10	10
HLR45S/A-M	380～415V, 3, 50	63	10	10

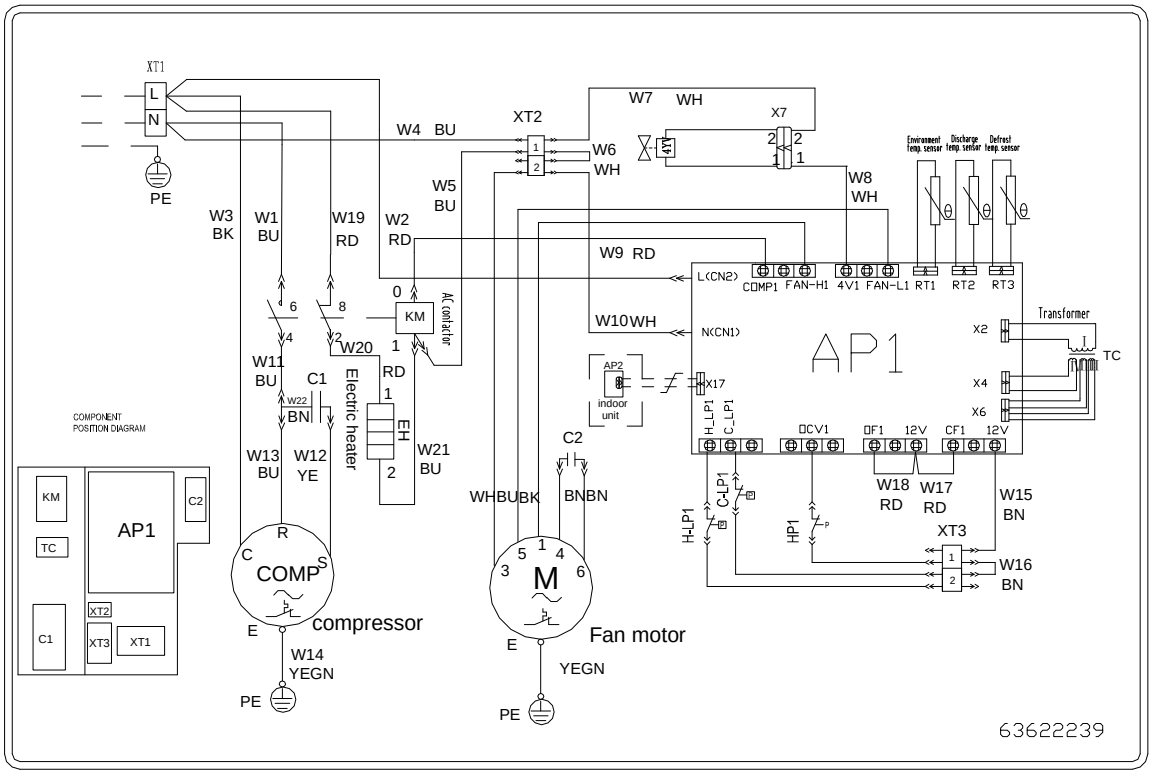
Note：

3.4 CIRCUIT DIAGRAM

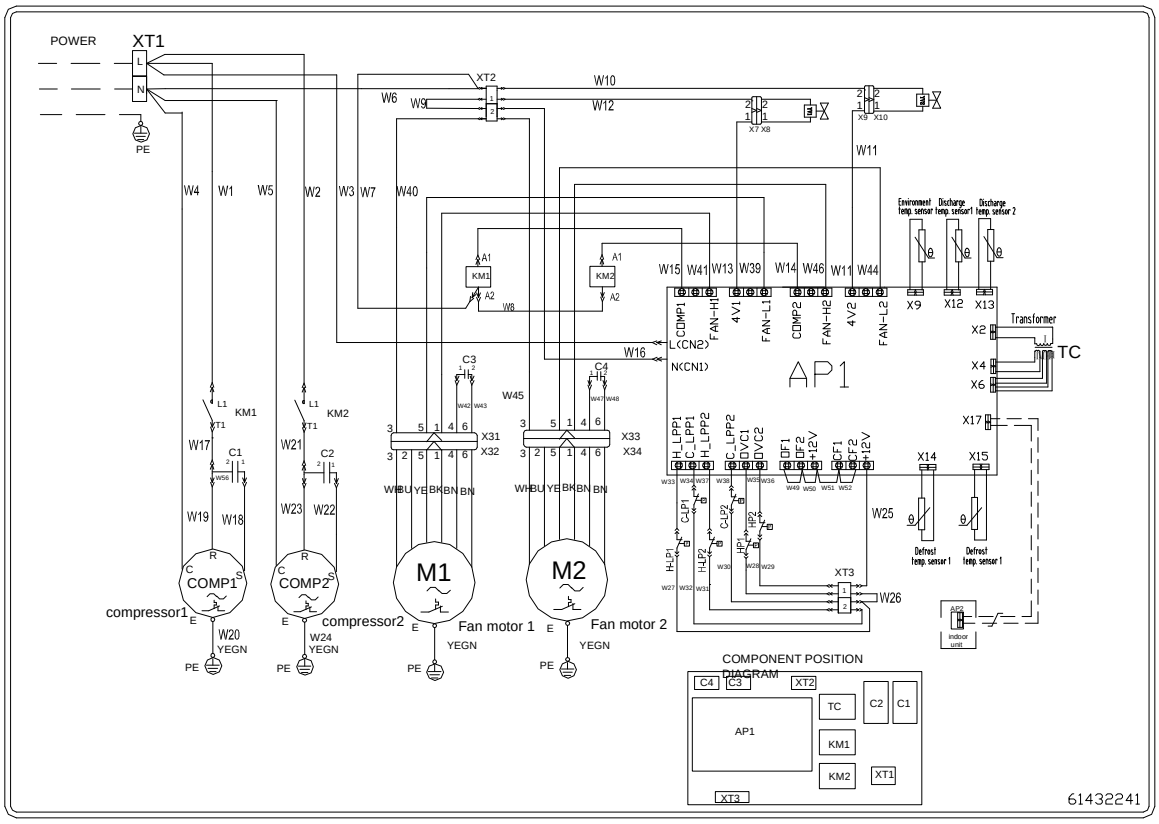
3.4.1 Circuit Diagram−Split Type

3.4.1.1 Outdoor Units

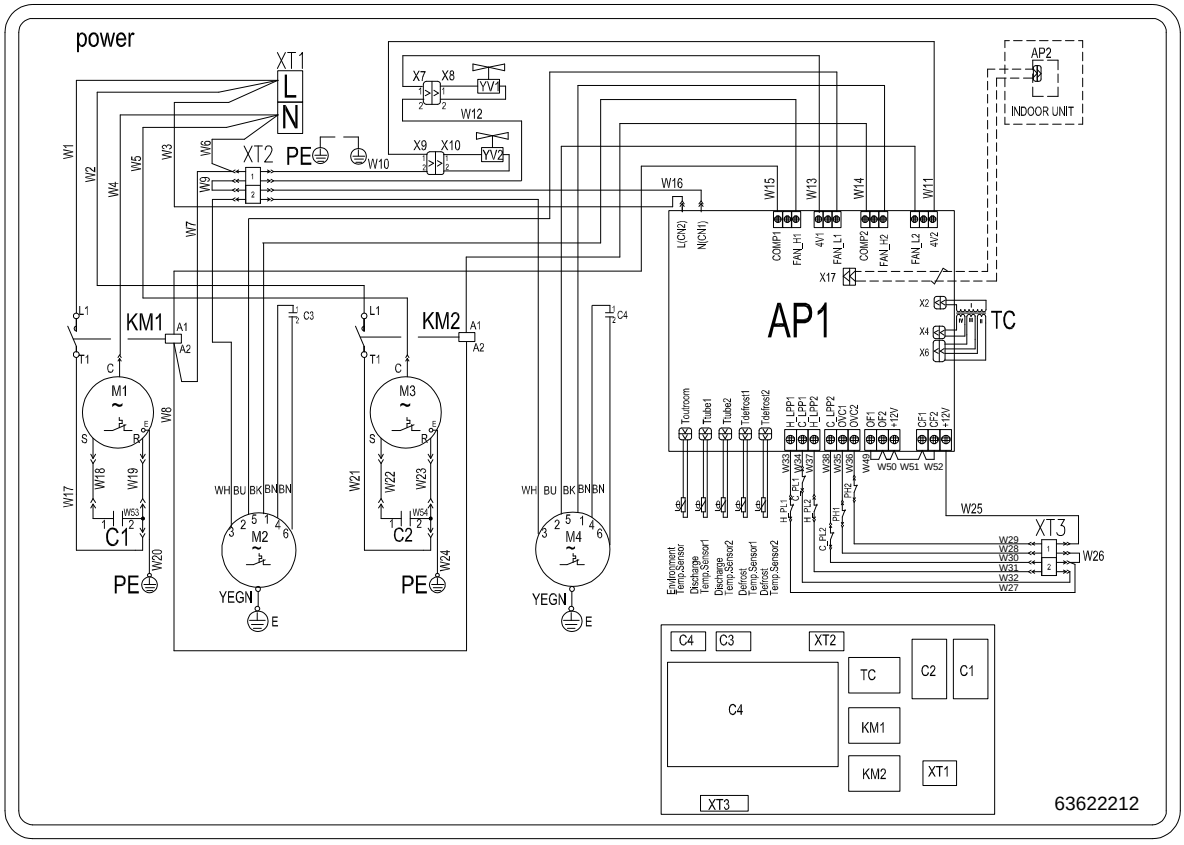
Model:HLR8WZ-K



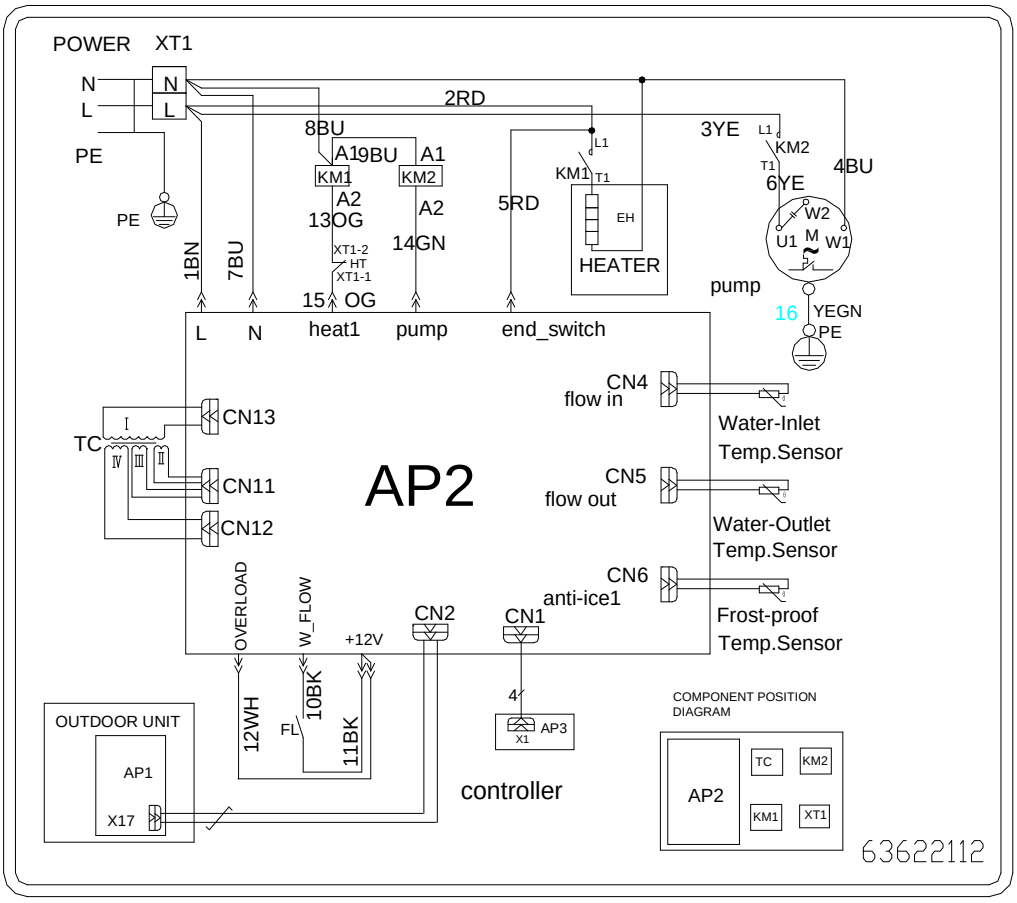
Model:HLR10WSZ-K, HLR12.5WSZ-K



Model:HLR15WSZ-K

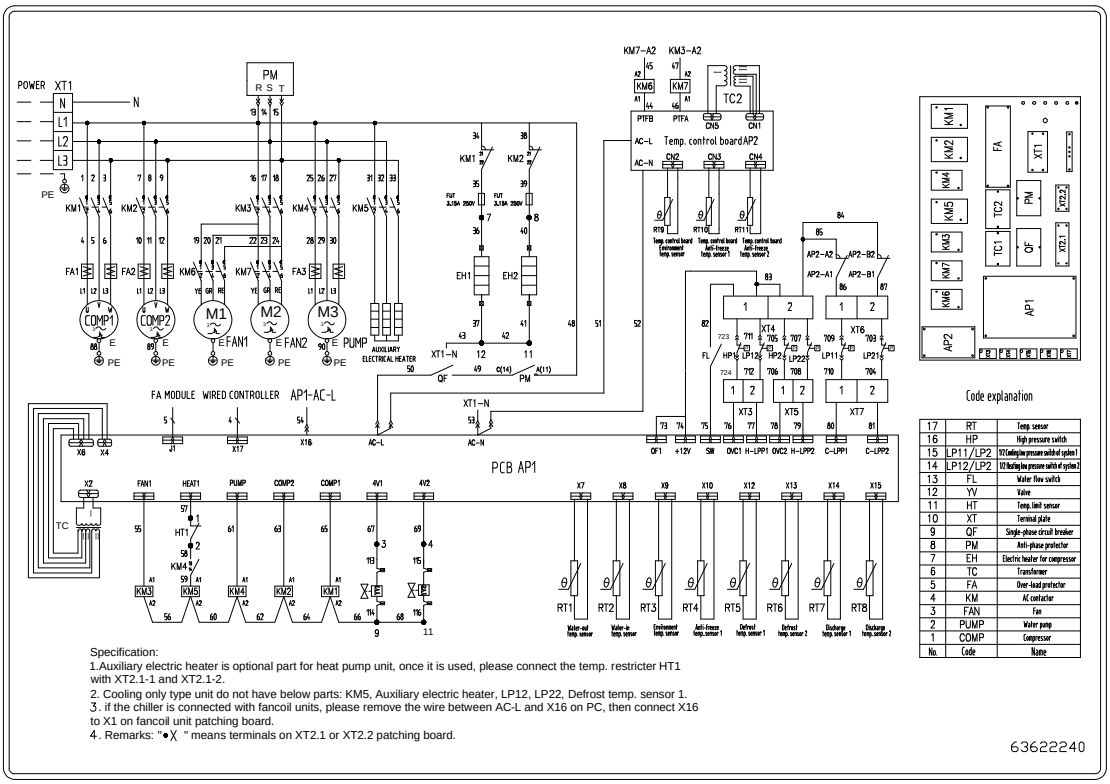


3.4.1.2 Indoor Units



3.4.2 Circuit Diagram- Integral Type

Model:HLR19S/A-M, HLR25S/A-M, HLR32S/A-M


POWER XT1
PM
Temp. control board AP2
PCB AP1
FA MODULE WIRED CONTROLLER AP1-AC-L
Code explanation
17 RT Temp. sensor
16 HP High pressure switch
15 LP11/LP2 1/2 Cooling low pressure switch of system 1
14 LP12/LP2 1/2 Heating low pressure switch of system 2
13 FL Water flow switch
12 YV Valve
11 HT Temp. limit sensor
10 XT Terminal plate
9 QF Single-phase circuit breaker
8 PM Anti-phase protector
7 EH Electric heater for compressor
6 TC Transformer
5 FA Over-load protector
4 KM AC contactor
3 FAN Fan
2 PUMP Water pump
1 COMP Compressor
No. Code Name

Specification:
1.Auxiliary electric heater is optional part for heat pump unit, once it is used, please connect the temp. restricter HT1 with XT2.1-1 and XT2.1-2.
2. Cooling only type unit do not have below parts: KM5, Auxiliary electric heater, LP12, LP22, Defrost temp. sensor 1.
3. if the chiller is connected with fancoil units, please remove the wire between AC-L and X16 on PC, then connect X16 to X1 on fancoil unit patching board.
4. Remarks: "●X " means terminals on XT2.1 or XT2.2 patching board.

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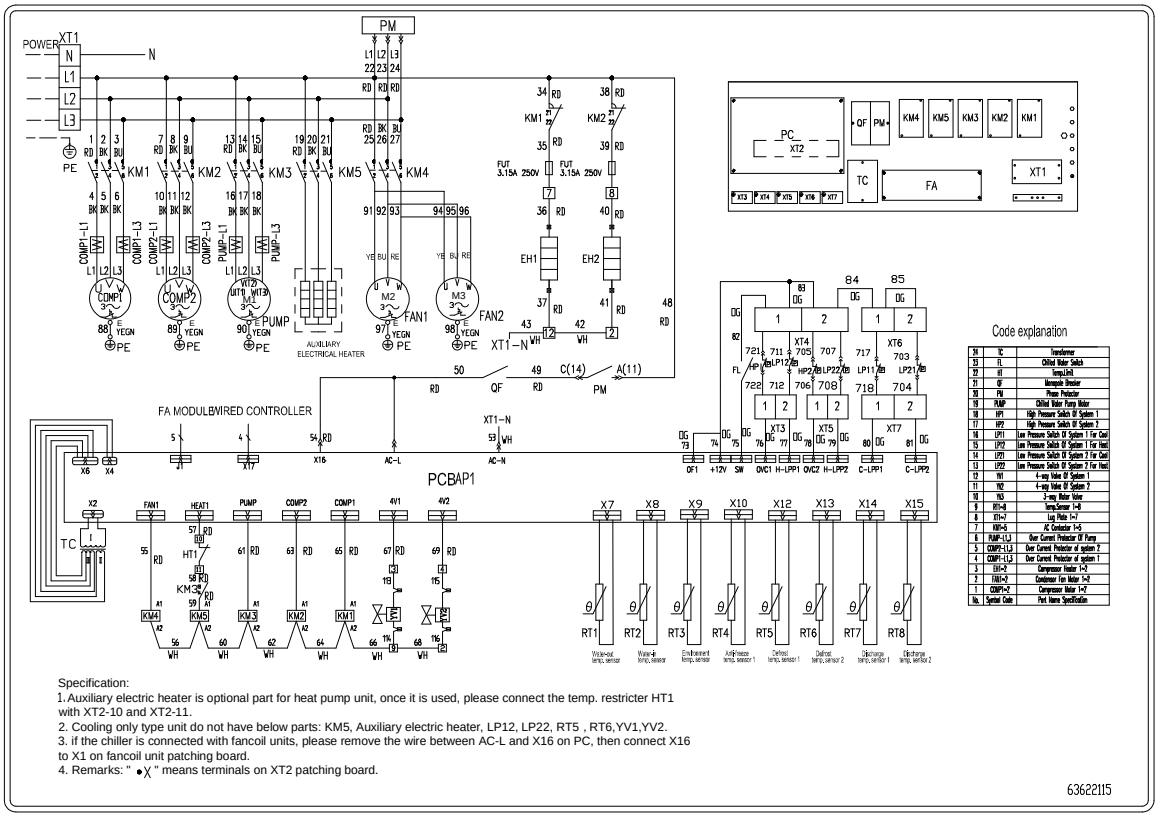
HLR35S/A-M, HLR45S/A-M



Specification:
1. Auxiliary electric heater is optional part for heat pump unit, once it is used, please connect the temp. restricter HT1 with XT2-10 and XT2-11.
2. Cooling only type unit do not have below parts: KM5, Auxiliary electric heater, LP12, LP22, RT5 , RT6,YV1,YV2.
3. if the chiller is connected with fancoil units, please remove the wire between AC-L and X16 on PC, then connect X16 to X1 on fancoil unit patching board.
4. Remarks: " ●X " means terminals on XT2 patching board.

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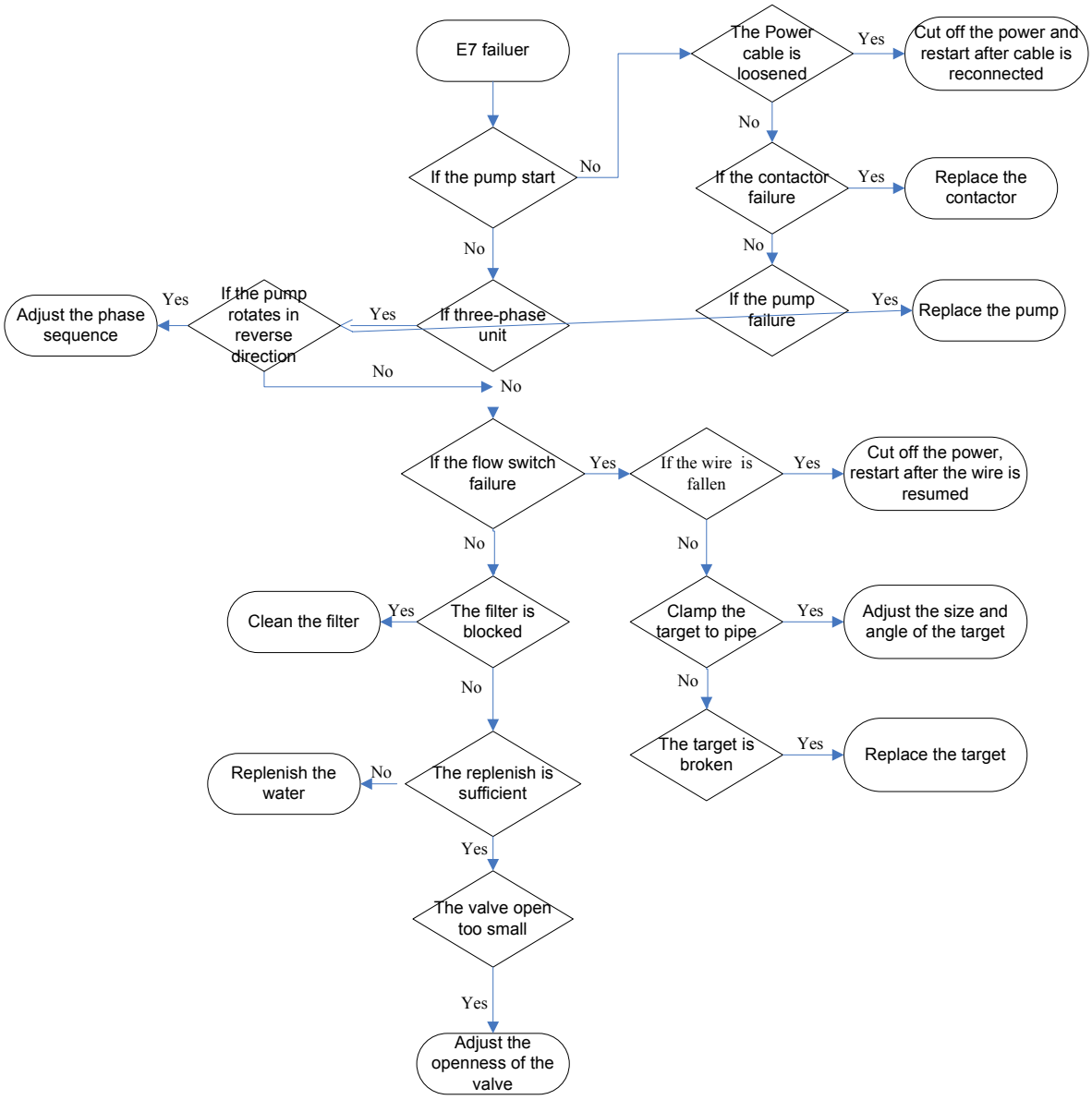
MAINTENANCE

UNITS MAINTENANCE

1 ERROR CODE LIST

Code Indication	Error Name	Control Description
E1	Comp. 1 High-pressure protection	Press ON/OFF key to clear
E2	System 1 antifreezing protection	Auto resume
E3	Comp. 1 Low pressure protection	Press ON/OFF key to clear
E4	Comp. 1 Discharge temp. protection	Press ON/OFF key to clear
E5	Comp. 1 overload protection	Press ON/OFF key to clear
E6	Pump overload protection	Press ON/OFF key to clear
E7	Flow switch malfunction	Press ON/OFF key to clear
E8	Fan 1 overload protection	Press ON/OFF key to clear
E9	System 1 outlet water temp. too high	Auto resume
b1	Comp. 2 High-pressure protection	Press ON/OFF key to clear
b2	System 2 antifreeze protection	Auto resume
b3	Comp. 2 Low pressure protection	Press ON/OFF key to clear
b4	Comp. 2 Discharge temp. protection	Press ON/OFF key to clear
b5	Comp. 2 overload protection	Press ON/OFF key to clear
b8	Fan 2 overload protection	Press ON/OFF key to clear
b9	System 2 outlet water temp. too high	Auto resume
F1	Antifreeze temp. sensor 1 malfunction	Auto resume
F2	Antifreeze temp. sensor 2 malfunction e	Auto resume
F3	Defrost temp. sensor 1 malfunction	Auto resume
F4	Defrost temp. sensor 2 malfunction	Auto resume
F5	Discharge temp. sensor 1 malfunction r	Auto resume
F6	Discharge temp. sensor 2 malfunction	Auto resume
F7	Outdoor ambient temp. sensor malfunction e	Auto resume
F8	Inlet water temp. sensor malfunction	Auto resume
F9	Outlet water temp. sensor malfunction	Auto resume
EC	Communication malfunction	Auto resume

2 FLOW CHART OF TROUBLESHOOTING



3 DISASSEMBLY AND ASSEMBLY PROCEDURE OF MAIN PARTS

3.1 Split Type

3.1.1 Outdoor Unit

Operation Procedure	Illustration
(1) Remove the front case 1） Remove the panel •Loosen the two tapping screws fixing the front grill. • Pull down and remove the front grill. （See Fig. 2）	
2） Remove the cover • Loosen the two tapping screws fixing the cover. Remove the cover （See Fig. 3）	 Fig. 3

3）Remove the front plate.

• Loosen the two tapping screws fixing the front plate. Remove the front plate.（See Fig. 5）

Fig. 4

Fig. 5

4）Remove the grill

• Loosen the two tapping screws fixing the grill. Remove the grill.（See Fig. 6）

Fig. 6

(2) Remove the axial fan

• Loosen the ball nuts fixing the axial fan and remove the washer.（See Fig. 7）

•Pull outward to remove the impeller.（See Fig. 7）

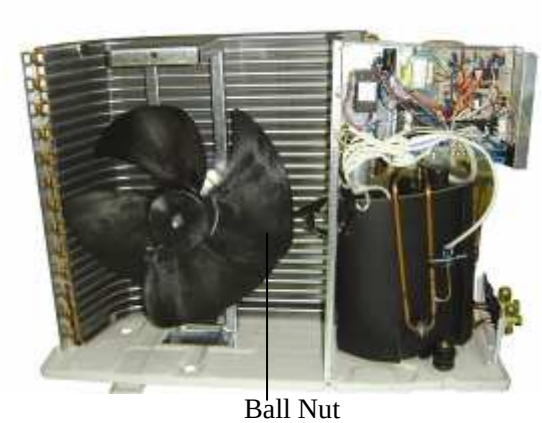


Fig. 7

(3) Remove the motor

• Loosen the screws fixing the motor support. Remove the motor support.（See Fig .8 & Fig.9）

Fig. 8

Fig. 9

• Loosen the two screws fixing the motor. Pull backward and remove the motor.（See Fig .10）
• Loosen the wire of motor, and pull it through the hole.

Fig. 10

(4) Remove the 4-way valve and capillary tube

1）Remove the 4-way valve

• Loosen the screws fixing the coil of 4-way valve。

• Remove the coil of 4-way valve。

•Welding out the tubes connected to the 4-way valve.

•Remove the 4-way valve.（See Fig.11）

Note：When welding, the valve should be covered by wet cloth in order to avoid the high temp. hurt。

Fig. 11

2）Remove the capillary tube

•Welding out the tubes connected to the capillary tube.

• Remove the capillary（See Fig.12）

Fig. 12

(5) Remove electric box

- Loosen the screws fixing the box cover. Remove all pressure switches and temp. sensor.（See Fig.13）

Fig.13

(6)Remove compressor and gas-liquid separator

- Remove the connection wire of compressor。（See Fig.14）
- welding out the suction pipe and discharge pipe.（See Fig.14）
- Loosen the bolts fixing the compressor and Remove the compressor and gas-liquid separator.

Fig.14

(7)Remove gas and liquid valve

1. Remove gas valve

• Loosen the bolts fixing the gas valve.

• welding out the pipe connected to the gas valve (See Fig.15）。

Note： When welding, the valve should be covered by wet cloth in order to avoid the high temp. hurt。

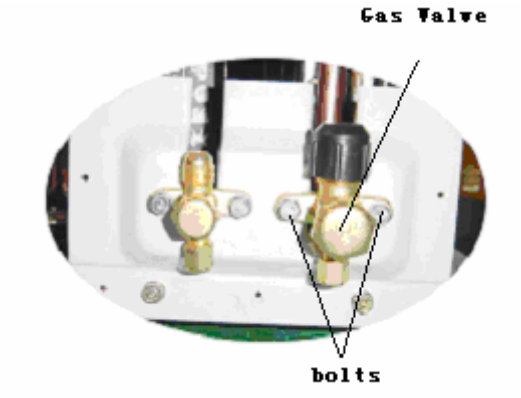


Fig.15

2. Remove liquid valve

• Loosen the bolts fixing the liquid valve.

• welding out the pipe connected to the liquid valve (See Fig.16）。

Note： When welding, the valve should be covered by wet cloth in order to avoid the high temp. hurt。

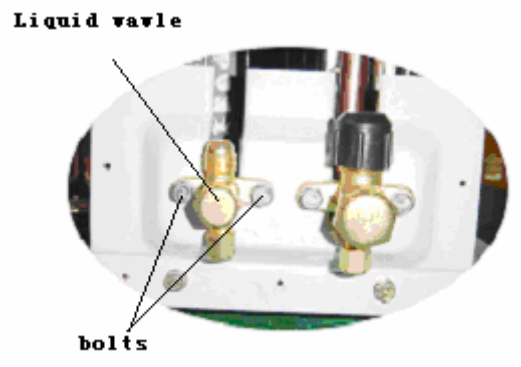


Fig.16

3.1.2 Indoor Unit

Operation Procedure	Illustration
(1) Remove the Cover • Loosen the tapping screws fixing the cover.（See Fig. 1） • Remove the cover（See Fig. 2）	 Fig. 1 Fig. 2
(2) Remove electric box • Loosen the screws fixing the box cover. Remove all pressure switches and temp. sensor.（See Fig.3）	 Electric box Fig. 3

3）Remove the water pump

• Loosen the joints fixing the water pump. Remove the water pump.（See Fig. 4）

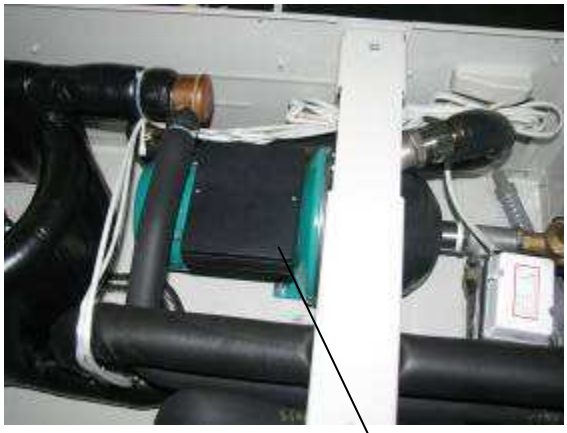


Fig. 4

4）Remove the tube in tube heat-exchanger

• welding out the pipes connected to the tube in tube heat-exchanger. Remove the tube in tube heat-exchanger.（See Fig. 5）

Fig. 5

5）Remove the flow switch

• Loosen the joints fixing the flow switch. Remove the flow switch.（See Fig. 6）

Fig. 6

6）Remove the expansion gas tank

• Loosen the joints fixing the expansion gas tank. Remove the expansion gas tank.（See Fig. 7）

Fig. 7

3.2 Integral Type

(1) Remove the front case

•Loosen the tapping screws fixing the front case. （See Fig. 1）

• Pull down and remove the front case.（See Fig. 2）

Fig. 1

Fig. 2

(2) Remove electric box

- Loosen the screws fixing the box cover. Remove all pressure switches and temp. sensor.（See Fig.3）

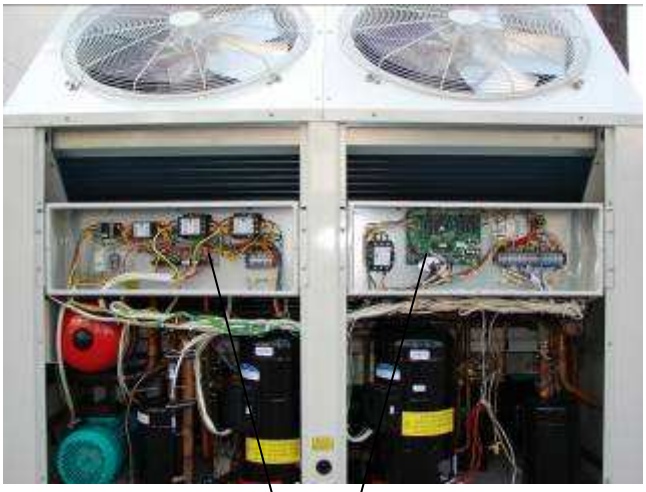


Fig. 3

(3)Remove compressor and gas-liquid separator

- Remove the connection wire of compressor。（See Fig.4）
- welding out the suction pipe and discharge pipe.（See Fig.4）
- Loosen the bolts fixing the compressor and Remove the compressor and gas-liquid separator.

Fig. 4

4）Remove the water pump

• Loosen the joints fixing the water pump. Remove the water pump.（See Fig. 5）

Fig. 5

5）Remove the expansion gas tank

• Loosen the joints fixing the expansion gas tank. Remove the expansion gas tank.（See Fig. 6）

Fig. 6

6）Remove the flow switch

• Loosen the joints fixing the flow switch. Remove the flow switch.（See Fig. 7）

Fig. 7

7）Remove the shell and tube heat-exchanger

• welding out the pipes connected to the shell and tube heat-exchanger. Remove the shell and tube heat-exchanger.（See Fig. 8）

Fig. 8

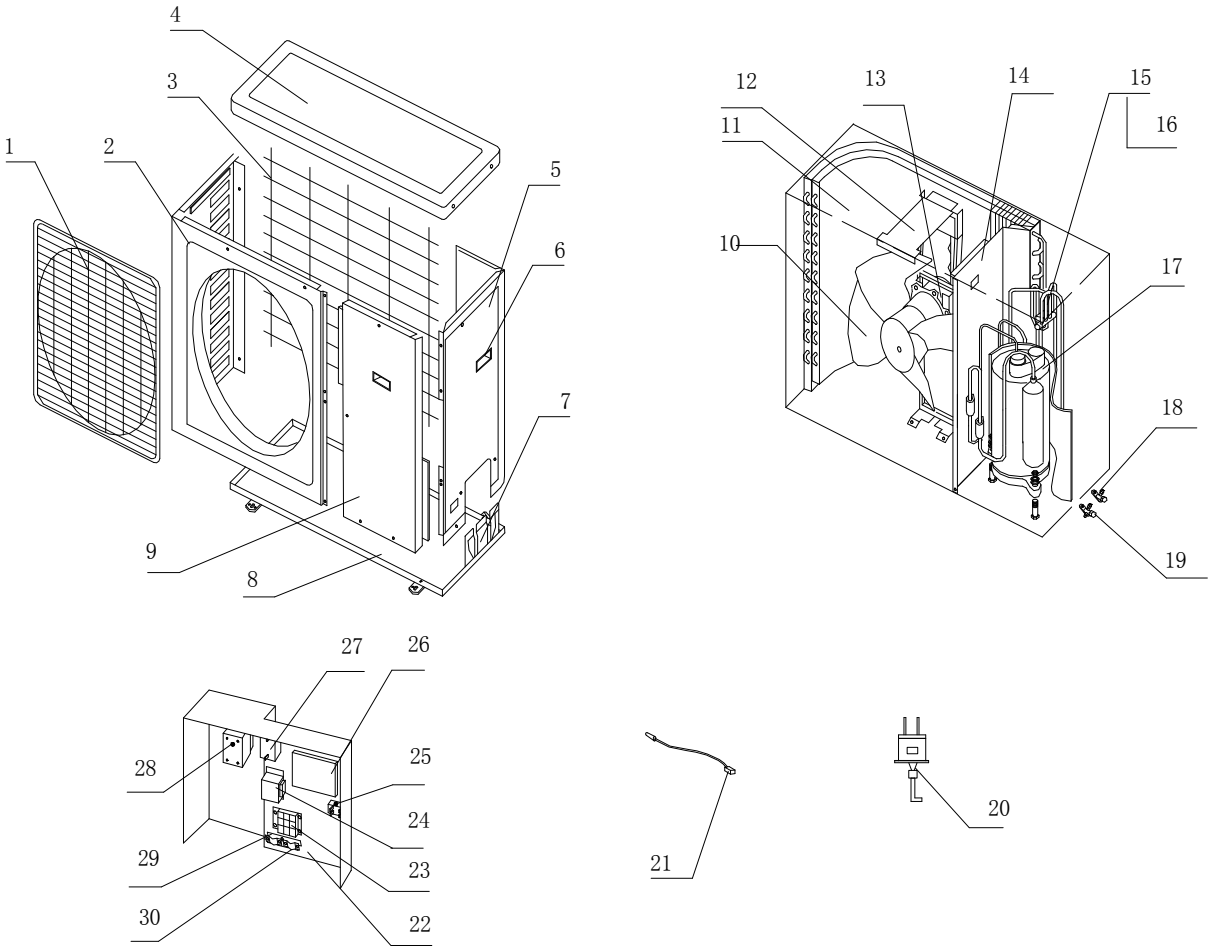
4 EXPLODED VIEWS AND PART LIST

4.1 Exploded Views and Parts List- Split Type

4.1.1 Outdoor Units

Model：HLR8WZ-K(O)

Exploded Views:

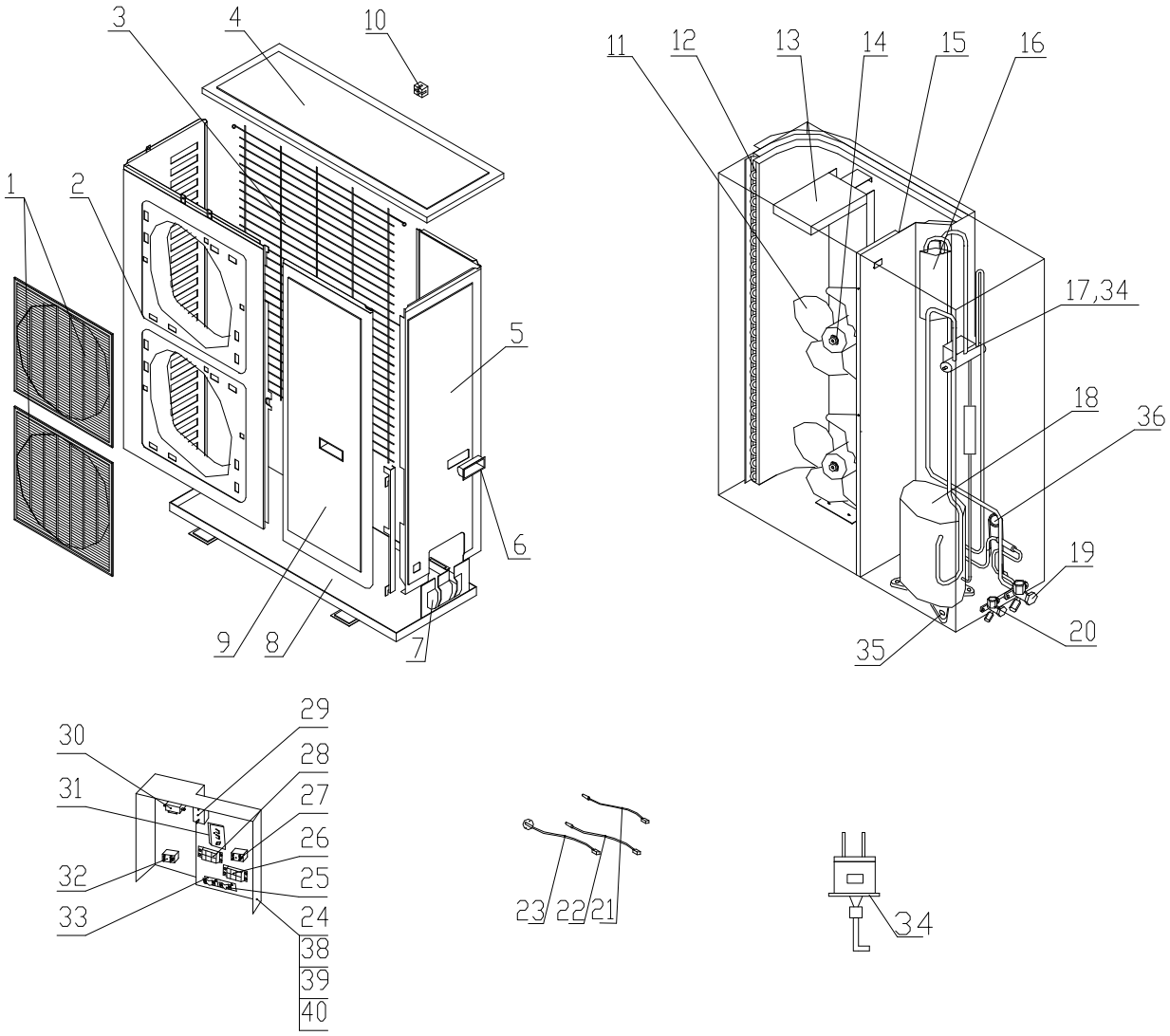


Part List for HLR8WZ-K(O):

No.	Name of Part	Part Code	Quantity
1	Front Grill	22265401	1
2	Front Plate	01435402	1
3	Protection Grill	01475401	1
4	Top Cover	01255402	1
5	Back Side Plate	01305401	1
6	Handle	26235252	3
7	Valve Support	01715402	1
8	Metal Base	01205402	1
9	Front Side Plate	01305403	1
10	Axial Flow Fan	10335401	1
11	Condenser Assy	01125703	1
12	Motor Support	01705402	1
13	Motor LW92C	150154511	1
14	Isolation Plate	01235403	1
15	4-way Valve (SHF-20H)	43000338	1
16	4-way Valve Coil	430004005	1
17	Compressor C-SBN303H8D	00129050	1
18	Gas Valve	07130212	1
19	Liquid Valve	071302335	1
20	Pressure Switch	460200061	1
21	Temp Sensor	3900012126	1
22	Electric Box	01405720	1
23	Terminal Board	42011044	1
24	Transformer 57X25D	43110240	1
25	Terminal Board	42011103	1
26	MainPCB WZ163	30221602	1
27	Capacitor CBB61 4uF/500V	33010013	1
28	AC Contactor GC3-18/01KK/3TF4211	44010226	1
29	Isolation WasherD	70410525	2
30	Wire Clamp	71010102	2

Model: HLR10WSZ-K(O).HLR12.5WSZ-K(O).HLR15WSZ-K(O)

Exploded views:



Part List for HLR10WSZ-K (O):

NO	Name of Part	Part Code	Quantity
1	Front Grill	22265251	2
2	Front Plate	01435433	1
3	Protection Grill	01475432	1
4	Top Cover	01255262	1
5	Back Side Plate	01305434	1
6	Handle	26235252	3
7	Valve Support	01715001	1
8	Metal Base	01205433	1
9	Front Side Plate	01305431	1
10	Protection Grill Gasket		0
11	Axial Flow Fan	10335253	2
12	Condenser Assy	01125702	1
13	Motor Support	01705431	1
14	Motor FW68G	15013110	2
15	Isolation Plate	01235440	1
16	Liquid-gas Separator	07225433	1
17	4-way Valve	43000338	1
18	Compressor C-SBN373H8D	00129051	1
19	Gas Valve	07130212	1
20	Liquid Valve	071302115	1
21	Ambient Sensor(15K)	3900012126	1
22	Temperature Sensor (20K)	3900012125	1
23	Temp. Limiter		0
24	Electric Box	01409067	1
25	Wire Clamp	71010102	2
26	Terminal Board	42011044	1
27	Terminal Board	42011103	1
28	Terminal Board		0
29	Capacitor CBB61 3.5μF/450V	33010010	2
30	AC Contactor GC3-18/01KK/3TF4211	44010226	1
31	Over current Protector	46020112	1
32	Phase Reverse Protector		0
33	Isolation Washer D	70410525	2
34	4-way Valve Coil	430004002	1
35	Compressor Gasket		0
36	Capillary Assy	04105702	1
37	pressure switch	460200061	1
38	Capacitor Clamp		0
39	Transformer 57X25D	43110240	1
40	Main PCB WZ163	30221602	1

Part List for HLR12.5WSZ-K(O):

NO	Name of Part	Part Code	Quantity
1	Front Grill	22265251	2
2	Front Plate	01435433	1
3	Protection Grill	01475432	1
4	Top Cover	01255262	1
5	Back Side Plate	01305434	1
6	Handle	26235252	3
7	Valve Support	01715001	1
8	Metal Base	01205433	1
9	Front Side Plate	01305431	1
10	Protection Grill Gasket		0
11	Axial Flow Fan	10335253	2
12	Condenser Assy	01125702	1
13	Motor Support	01705431	1
14	Motor FW68G	15013110	2
15	Isolation Plate	01235440	1
16	Liquid-gas Separator	07225433	1
17	4-way Valve	43000338	1
18	Compressor C-SBN373H8D	00102702	1
19	Gas Valve	07130212	1
20	Liquid Valve	071302115	1
21	Ambient Sensor(15K)	3900012126	1
22	Temperature Sensor (20K)	3900012125	1
23	Temp. Limiter		0
24	Electric Box	01409067	1
25	Wire Clamp	71010102	2
26	Terminal Board	42011044	1
27	Terminal Board	42011103	1
28	Terminal Board		0
29	Capacitor CBB61 3.5μF/450V	33010010	2
30	AC Contactor GC3-18/01KK/3TF4211	44010226	1
31	Over current Protector	46020112	1
32	Phase Reverse Protector		0
33	Isolation Washer D	70410525	2
34	4-way Valve Coil	430004002	1
35	Compressor Gasket		0
36	Capillary Assy	04105702	1
37	Pressure Switch	460200061	1
38	Capacitor Clamp		0
39	Transformer 57X25D	43110240	1
40	Main PCB WZ163	30221602	1

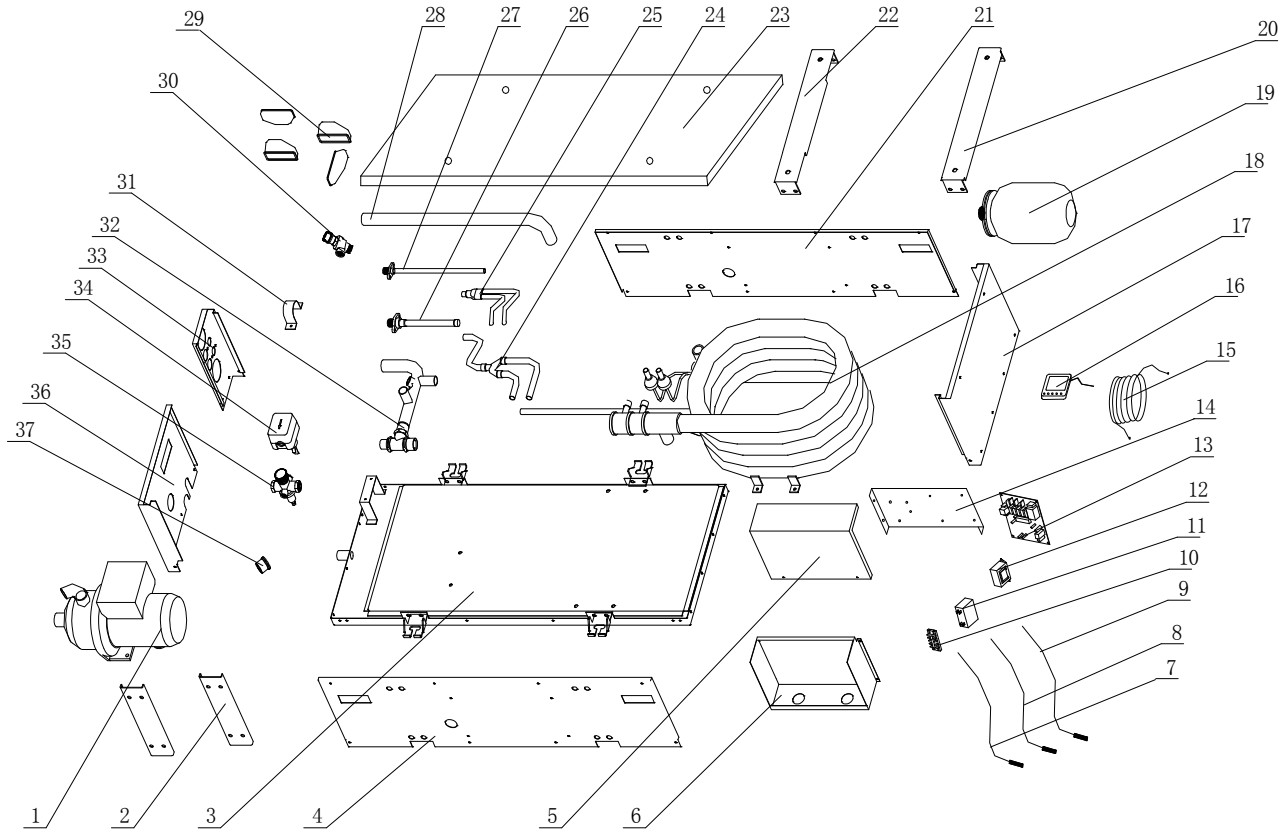
Part List for HLR15WSZ-K(O):

NO	Name of Part	Part Code	Quantity
1	Front Grill	22265251	2
2	Front Plate	01435433	1
3	Protection Grill	01475432	1
4	Top Cover	01255472	1
5	Back Side Plate	01305434	1
6	Handle	26235252	3
7	Valve Support	01715001	1
8	Metal Base	01205472	1
9	Front Side Plate	01305431	1
10	Protection Grill tub	42035201	1
11	Axial Flow Fan	10335253	2
12	Condenser Assy	01109107	1
13	Motor Support	01705471	1
14	Motor LW92C	150154511	2
15	Isolation Plate	01235473	1
16	Liquid-gas Separator	07225479	1
17	4-way Valve	43000338	1
18	Compressor C-SBN453H8D	00129052	1
19	Gas Valve	07130212	1
20	Liquid Valve	071302335	1
21	Ambient Sensor(15K)	3900012126	1
22	Temperature Sensor (20K)	3900012125	1
23	Temp. Sensor	3900012129	1
24	Electric Box	01392108	1
25	Wire Clamp	71010102	2
26	Terminal Board	42011044	1
27	Terminal Board	42011103	2
28	Terminal Board		0
29	Capacitor 4uF/500V	33010013	2
30	AC Contactor LC1D2501M7C	44010213	1
31	Over current Protector	46020103	1
32	Phase Reverse Protector 380V	46020052	1
33	Isolation Washer C	70410523	1
34	4-way Valve Coil	430004005	1
35	Compressor Gasket	76710209	4
36	Capillary Assy	03009105	1
37	pressure switch	460200061	1
38	Capacitor Clamp		0
39	Transformer 57X25D	43110240	1
40	Main PCB WZ163	30221602	1

4.1.2 Indoor Units

Model：HLR8WZ-K(I).HLR10WSZ-K(I) .HLR12.5WSZ-K(I).HLR15WSZ-K(I)

Exploded views:



Part List for HLR8WZ-K(I):

NO	Name of Part	Part Code	Quantity
1	Water Pump	43138218	1
2	Vertical Pillar Assy	01758216	4
3	Pedestal Parts	012021191	1
4	Front Panel Assy	015382471	1
5	Electric Box cover	014182371	1
6	Electric Box	01418235	1
7	Temperature Sensor	390001219	1
8	Temperature Sensor	390001217	1
9	Temperature Sensor	3900019819	1
10	Terminal Board	42010254	1
11	AC Contactor CJX9B-25S/D	44010245	1
12	Transformer 57X25D	43110240	1
13	Main Board	30221501	1
14	Electric Component Mounting Plate	01338243	1
15	Wiring	40110111	1
16	Display Board	30291603	1
17	Left Side Plate	01302116	1
18	Double Pipe Heat Exchanger	00908231	1
19	Expansion Drum	07228219	1
20	Cross Beam Sub-Assy	01778240	1
21	Rear Panel Assy	015382501	1
22	Cross Beam Sub-Assy 1	01778240	1
23	Top Cover	012521111	1
24	Collecting Gas Pipe Sub-Assy	04672101	1
25	Liquid Divider Sub-Assy	04322108	1
26	Gas Pipe Sub-Assy	03812159	1
27	Liquid Sub-Assy	03232157	1
28	Outlet Water Pipe Sub-Assyv	03248247	1
29	Big Handle	26233431	1
30	Relief Valve	07188204	1
31	Tube Clip	02148224	1
32	Enter Water Pipe Sub-Assy	03248248	1
33	Right Side Plate 1	01302118	1
34	Water switch FSF50P-2G1/2	45028207	1
35	Auto Water Replenishing Valve	07108207	1
36	Right Side Plate 2	01302114	1
37	Water tube jam	76718201	1

Part List for HLR10WSZ-K(I):

NO	Name of Part	Part Code	Quantity
1	Water Pump MHI202	43138218	1
2	Vertical Pillar Assy	01758216	4
3	Pedestal Parts	012021171	1
4	Front Panel Assy	015382471	1
5	Electric Box cover	014182371	1
6	Electric Box	01418235	1
7	Temperature Sensor	390001219	1
8	Temperature Sensor	390001217	1
9	Temperature Sensor	390001216	1
10	Terminal Board	42010254	1
11	AC Contactor CJX9B-25S/D	44010245	1
12	Transformer 57X25D	43110240	1
13	Main Board Z153	30221501	1
14	Electric Component Mounting Plate	01338243	1
15	Wiring	40110111	1
16	Display Board Z16301	30291603	1
17	Left Side Plate	01302116	1
18	Double Pipe Heat Exchanger	009082291	1
19	Expansion Drum	07228219	1
20	Cross Beam Sub-Assy	01778240	1
21	Rear Panel Assy	015382501	1
22	Cross Beam Sub-Assy 1	01778236	1
23	Top Cover	012521091	1
24	Collecting Gas Pipe Sub-Assy	04672101	1
25	Liquid Divider Sub-Assy	04322108	1
26	Gas Pipe Sub-Assy	04632102	1
27	Liquid Sub-Assy	04322106	1
28	Outlet Water Pipe Sub-Assyv	03248246	1
29	Big Handle	26233431	1
30	Relief Valve	07188204	1
31	Tube Clip	02148224	1
32	Enter Water Pipe Sub-Assy	03248248	1
33	Right Side Plate 1	01312107	1
34	Water switch FSF50P-2G1/2	45028207	1
35	Auto Water Replenishing Valve	07108207	1
36	Right Side Plate 2	01302114	1
37	Water Tube Jam	76718201	1

Part List for HLR12.5WSZ-K(I):

NO	Name of Part	Part Code	Quantity
1	Water Pump MHI202	43138218	1
2	Vertical Pillar Assy	01758216	4
3	Pedestal Parts	012021171	1
4	Left Side Plate	01302116	1
5	Electric Box cover	014182371	1
6	Electric Box	01418235	1
7	Temperature Sensor	390001219	1
8	Temperature Sensor	390001217	1
9	Temperature Sensor	3900012116	1
10	Terminal Board	42010254	1
11	AC Contactor CJX9B-25S/D	44010245	1
12	Transformer 57X25D	43110240	1
13	Main Board Z153	30221501	1
14	Electric Component Mounting Plate	01338243	1
15	Wiring	40110111	1
16	Display Board Z16301	30291603	1
17	Left Side Plate	01302116	1
18	Double Pipe Heat Exchanger	00908229	1
19	Expansion Drum	07228219	1
20	Cross Beam Sub-Assy	01778240	1
21	Rear Panel	015382501	1
22	Cross Beam Sub-Assy 1	01778236	1
23	Top Cover	012521091	1
24	Collecting Gas Pipe Sub-Assy	04672101	1
25	Liquid Divider Sub-Assy	04322108	1
26	Gas Pipe Sub-Assy	04632102	1
27	Liquid Sub-Assy	04322106	1
28	Outlet Water Pipe Sub-Assyv	03248247	1
29	Big Handle	26233431	1
30	Relief Valve	07188204	1
31	Tube Clip	02148224	1
32	Enter Water Pipe Sub-Assy	03248248	1
33	Right Side Plate 1	01312107	1
34	Water switch FSF50P-2G1/2	45028207	1
35	Auto Water Replenishing Valve	07108207	1
36	Right Side Plate 2	01302114	1
37	Water Tube Jam	76718201	1

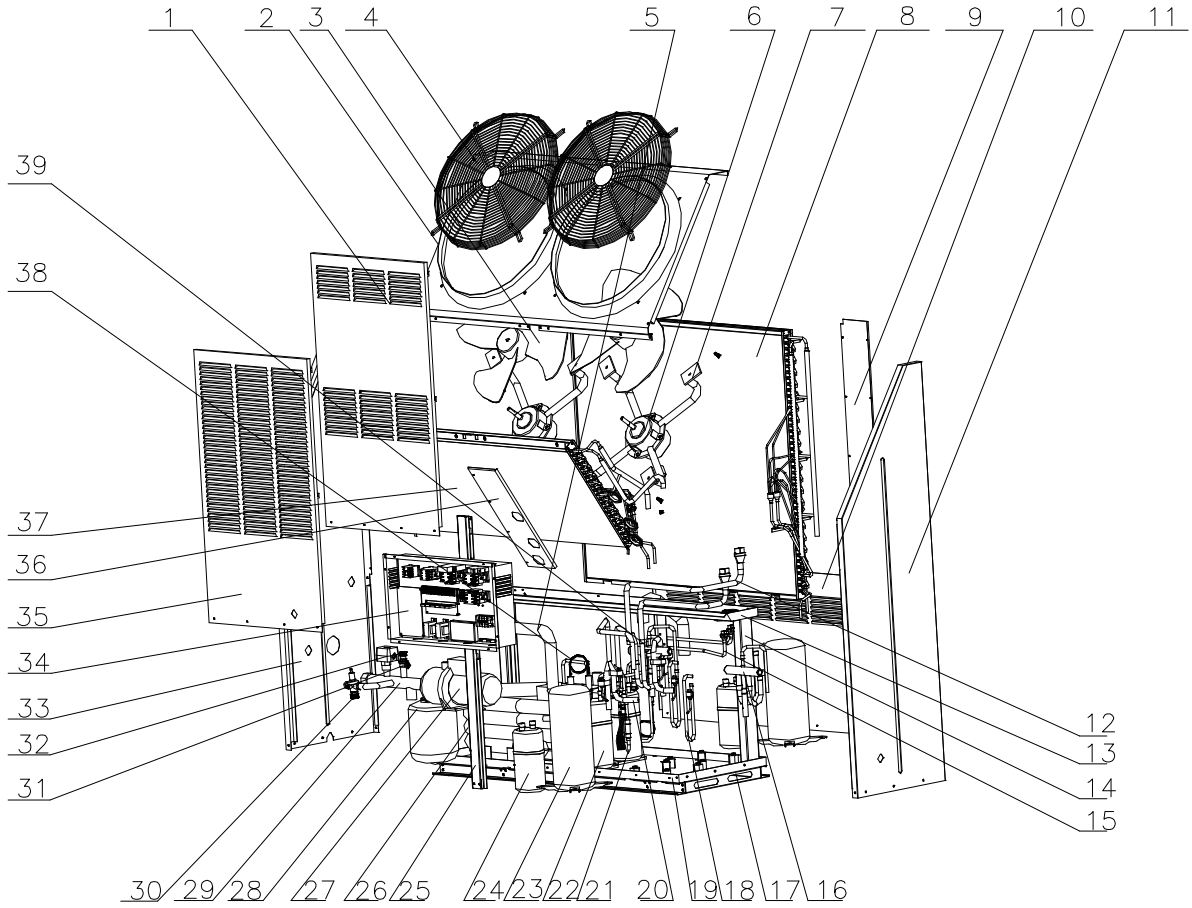
Part List for HLR15WSZ-K(I)：

NO	Name of Part	Part Code	Quantity
1	Water Pump MHI202	43138218	1
2	Vertical Pillar Assy	01758216	4
3	Pedestal Parts	012021171	1
4	Left Side Plate	01302116	1
5	Electric Box cover	014182371	1
6	Electric Box	01418235	1
7	Temperature Sensor	390001219	1
8	Temperature Sensor	390001217	1
9	Temperature Sensor	3900012116	1
10	Terminal Board	42010254	1
11	AC Contactor CJX9B-25S/D	44010245	1
12	Transformer 57X25D	43110240	1
13	Main Board Z153	30221501	1
14	Electric Component Mounting Plate	01338243	1
15	Wiring	40110111	1
16	Display Board Z16301	30291603	1
17	Left Side Plate	01302116	1
18	Double Pipe Heat Exchanger	00908229	1
19	Expansion Drum	07228219	1
20	Cross Beam Sub-Assy	01778240	1
21	Rear Panel	015382501	1
22	Cross Beam Sub-Assy 1	01778236	1
23	Top Cover	012521091	1
24	Collecting Gas Pipe Sub-Assy	04672101	1
25	Liquid Divider Sub-Assy	04322108	1
26	Gas Pipe Sub-Assy	04632102	1
27	Liquid Sub-Assy	04322106	1
28	Outlet Water Pipe Sub-Assyv	03248246	1
29	Big Handle	26233431	1
30	Relief Valve	07188204	1
31	Tube Clip	02148224	1
32	Enter Water Pipe Sub-Assy	03248248	1
33	Right Side Plate 1	01312107	1
34	Water Switch FSF50P-2G1/2	45028207	1
35	Auto Water Replenishing Valve	07108207	1
36	Right Side Plate 2	01302114	1
37	Water Tube Jam	76718201	1

4.2 Exploded Views and Parts List- Integral Type

Model： HLR19S/A-M.HLR25S/A-M.HLR32S/A-M

Exploded views：



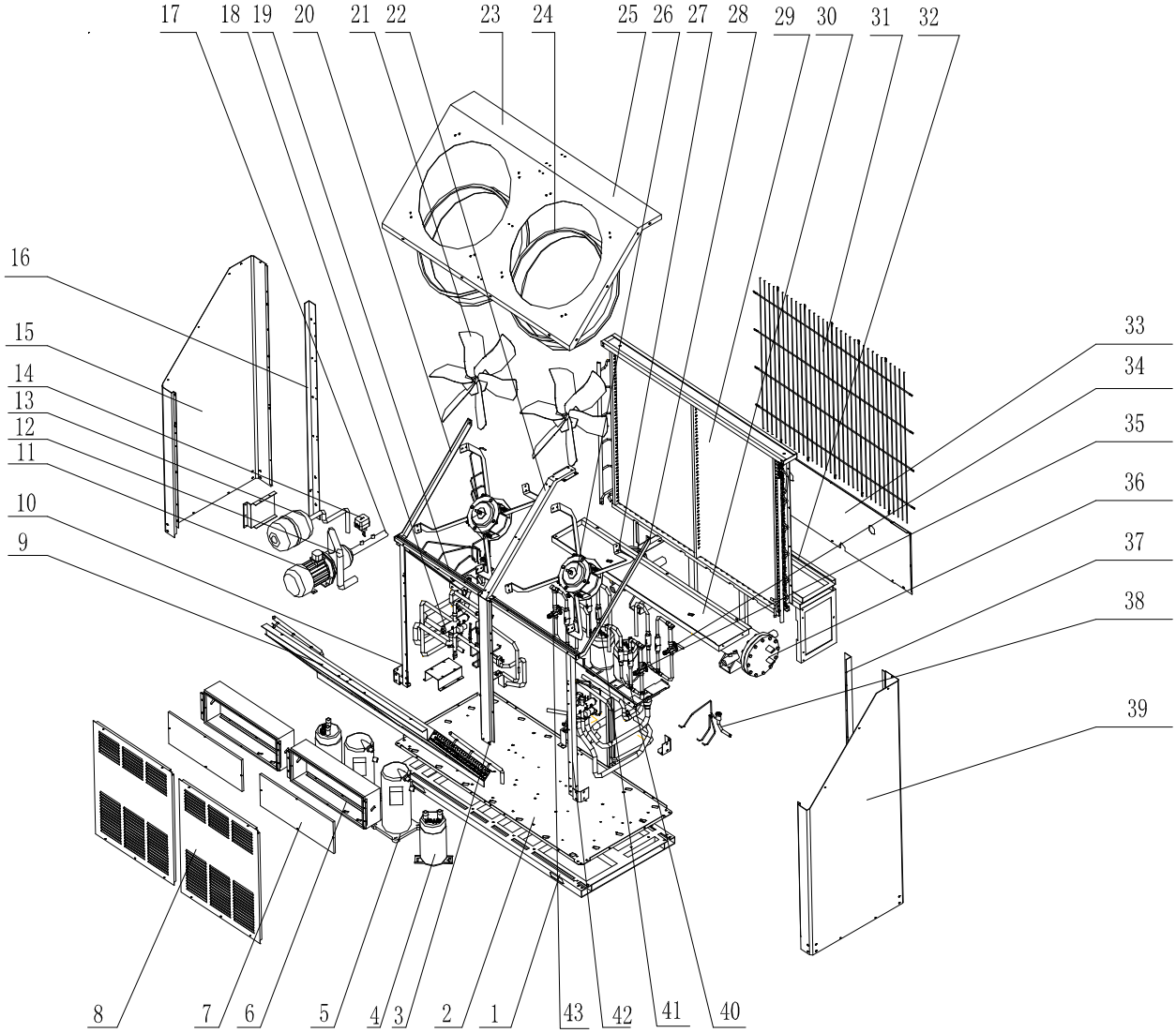
Part List for HLR19S/A-M.HLR25S/A-M.HLR32S/A-M：

No	Name of Part	Part Code	Quantity
1	Front Panel 2	01542102	1
2	Encloser Sub-assy	01512101	1
3	Fan	10358202	2
4	Grill	01572101	2
5	Outlet Pipe Sub-assy	04362102	1
6	Fan Motor SW200B	15018501	2
7	Motor Support Sub-assy	01708222	2
8	Condenser Components 1	011221042	1
9	Windshield 2	01352102	1
10	Rear Side Plate	01312111	1

11	Right Side Plate Sub-assy	01312233	1
12	Transition Pipe Sub-assy 1 (Four-way Valve-condenser)	04312244	1
13	Water Tray Sub-assy	01282102	1
14	Vertical Shaft 2	01852102	2
15	Transition Pipe Sub-assy 3 (Condenser-Capillary for heating)	04312110	1
16	Four-way Valve Sub-assy 1	04142226	1
17	Base Frame Sub-assy	01282253	1
18	Discharge Pipe Sub-assy	04632241	2
19	Base Plate Sub-assy	0119210102	1
20	Suction Pipe Sub-assy	04672110	1
21	Capillary Sub-assy (Heating)	04102220	2
22	Two-direction Liquid Vessel	07228214	2
23	Compressor and Fittings C-SBN373H8D	00129051	2
24	Gas-liquid Separator	07228212	2
25	Vertical Shaft Sub-assy 1	01852101	1
26	Tube-in-tube Heat Exchanger	009021011	1
27	Water Pump MHI404 3～400V	43138206	1
28	Expansion Vessel	072282191	1
29	Inlet Pipe Sub-assy	04362103	1
30	Auto Water Replenishing Valve	07108207	1
31	Emergency Valve	07188204	1
32	Water Flow Switch FSF50P-1R1	45028209	1
33	Left Side Board Sub-assy	01312109	1
34	Electric Box Sub-assy	01392114	1
35	Front Panel 1	01542101	1
36	Wind Shield 1	01352101	1
37	Condenser Components 2	011221052	1
38	Capillary Sub-assy (Cooling)	04102221	2
39	Four-way Valve Sub-assy 2	04142227	1

Model：HLR35S/A-M.HLR75S/A-M

Exploded views：



Part List for HLR35S/A-M.HLR75S/A-M：

No	Name of Part	Part Code	Quantity
1	Base Frame Sub-assy	01202113	1
2	Base Plate Sub-assy	01202111	1
3	Front Vertical Shaft Sub-assy	01758211	1
4	Gas-liquid Separator	07228003	2
5	Compressor and Fittings ZP83KCE-TFD-522	00202231	2
6	Electric Cabinet Sub-assy	01408249	2

7	Cover Plate for Electric cabinet	01258226	2
8	Front Side Plate	01302103	2
9	Condenser Components 2	01108240	1
10	Vertical Shaft(Front-right)	01722107	1
11	Water Pump MHI804	431382041	1
12	Inlet Pipe Sub-assy 2	04362101	1
13	Expansion Vessel	072282191	1
14	Water Flow Switch FSF50P-1R1	45028209	1
15	Left Side Plate	01308274	1
16	Vertical Shaft (Behind-right)	01722103	1
17	Inlet Pipe Sub-assy 1	03248243	1
18	Four-way Valve(SHF-35H)	43000339	2
19	Horizontal Beam (Front)	01778215	1
20	Horizontal Beam (Left)	01778204	1
21	Fan	10518601	2
22	Horizontal Beam (cover plate)	01778213	1
23	Roof Cover Plate Sub-assy(Left)	01252103	1
24	Flow-guide Loop	01448243	2
25	Roof Cover Plate Sub-assy(Right)	01252105	1
26	Mortor SW300A	15018606	1
27	Mortor Mounted Plate Sub-assy	01728238	2
28	Horizontal Beam (Right)	01778206	2
29	Condenser Components 1	01108239	1
30	Water Tray Sub-assy	01272103	1
31	Rear Grill	01238202	1
32	Condenser Base Tray Sub-assy	01768211	1
33	Rear Side Plate 1	01302106	1
34	Expansion Valve Sub-assy 1 For Heating	07332229	1
35	Expansion Valve Sub-assy 1 For Cooling	07332227	1
36	Shell in Tub GZR35S	01050809	1
37	Vertical Shaft (Behind-right)	01722103	1
38	Current Divider	06618733	2
39	Right Side Plate	01308276	1
40	Two-direction Liquid vessel	07228213	2
41	Expansion Valve Sub-assy 2 For Heating	07332230	1
42	Vertical Shaft (Front-right)	01722107	1
43	Expansion Valve Sub-assy 2 For Cooling	07332228	1